Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Rising 8th Summer Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Use a number line to find the absolute value.
$\left| \frac{33}{11} \right|$

a. 3
b. 0
c. –3
d. 9

____ 2. Find the absolute value of –0.25.

a. $\frac{1}{0.25}$
b. 4
c. –0.25
d. 0.25

____ 3. Find the absolute value of $-\frac{18}{33}$. Express your answer in simplest form.

a. $\frac{33}{18}$
b. $\frac{6}{11}$
c. $-\frac{33}{18}$
d. $-\frac{6}{11}$

____ 4. Find the absolute value of $-\frac{25}{15}$. Express your answer in simplest form.

a. $\frac{5}{3}$
b. $-\frac{5}{3}$
c. $-\frac{15}{25}$
d. $\frac{15}{25}$

____ 5. Write the fraction $\frac{8}{22}$ as $\frac{m}{n}$ in simplest form where *m* and *n* are integers.

a. $\frac{4}{22}$
b. $\frac{4}{11}$
c. $\frac{2}{9}$
d. $\frac{6}{10}$

____ 6. Write the integer 9 as $\frac{m}{n}$ in simplest form where *m* and *n* are integers.

a. $\frac{0}{9}$
b. $\frac{9}{1}$
c. $\frac{1}{9}$
d. $\frac{9}{0}$

____ 7. Write the decimal –0.75 as $\frac{m}{n}$ where *m* and *n* are integers with $n \neq 0$.

a. $-\frac{1}{75}$
b. $-\frac{7}{10}$
c. $-1\frac{3}{4}$
d. $-\frac{3}{4}$

____ 8. Write the decimal 0.268 as $\frac{m}{n}$ where m and n are integers with $n \neq 0$.

a. $\frac{27}{100}$

b. $\frac{67}{250}$

c. $\frac{45}{167}$

d. $\frac{134}{501}$

____ 9. Write the decimal 1.33 as $\frac{m}{n}$ where m and n are integers with $n \neq 0$.

a. $1\frac{3}{10}$

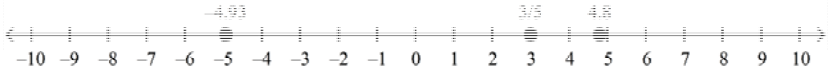
b. $\frac{33}{100}$

c. $\frac{133}{100}$

d. $\frac{1}{33}$

____ 10. Locate the rational numbers 4.8, $\frac{3}{5}$, and –4.93 on the number line.

a.



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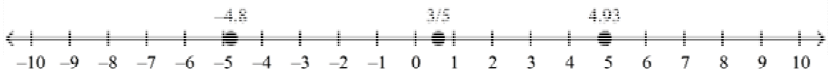

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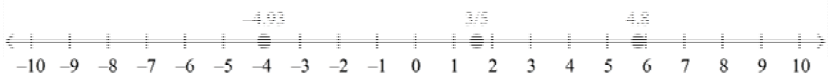
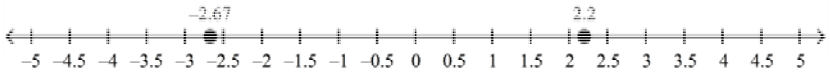


____ 11. Locate the rational numbers $\frac{17}{18}$, 2.2, and –2.67 on the number line.

a.



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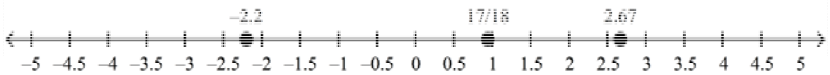

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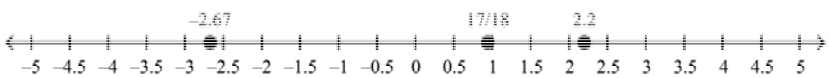

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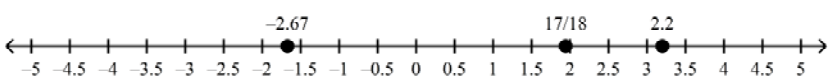


____ 12. During a review game, Mr. Pai's class correctly answered 66 questions on the first try. If there were 75 questions in the game, at what rate were questions answered correctly on the first try? Express your answer as a decimal.

a. 1.14
b. 8.8
c. 0.88
d. 0.088

____ 13. Compare the rational numbers $\frac{2}{8}$? $\frac{6}{5}$ using the symbols < or >.

a. <
b. >

____ 14. Compare the rational numbers $-\frac{3}{4}$? $-\frac{8}{10}$ using the symbols < or >. Use a number line to help you.

a. >
b. <

____ 15. Compare the rational numbers 0.25 __?_ 0.65 using the symbols < or >. Use a number line to help you.

a. >
b. <

____ 16. Which types of numbers can you graph on a number line?

a. Integers only
b. Rational numbers only
c. Irrational numbers only
d. Rational and irrational numbers

____ 17. Complete the statement.
Irrational numbers _____

a. can be expressed as a ratio of two integers.
b. cannot be graphed on a number line.
c. have decimal values which do not terminate or repeat.
d. cannot be negative.

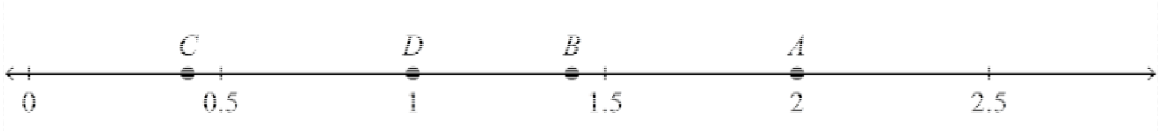
____ 18. Which number is not an irrational number?

a. $2\sqrt{2}$
b. $\sqrt{2}$
c. $\sqrt{2^2}$
d. $-\sqrt{2}$

____ 19. State if the number $\frac{\sqrt{47}}{7}$ is rational, irrational, or not a real number.

a. irrational
b. not a real number
c. rational

____ 20. Which point represents $\sqrt{2}$?

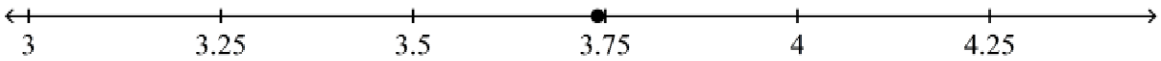


a. *A*
b. *B*
c. *C*
d. *D*

____ 21. Which square root is between the whole numbers 4 and 5?

a. $\sqrt{4.5}$
b. $\sqrt{16}$
c. $\sqrt{20}$
d. $\sqrt{25}$

____ 22. Which square root is graphed?



a. $\sqrt{3.74}$
b. $\sqrt{12}$
c. $\sqrt{14}$
d. $\sqrt{15}$

____ 23. Graph $\sqrt{17}$ using rational approximations.

a. 

b. 

c. 

d. 

____ 24. Which expression is equivalent to $\left|-\sqrt{29}\right|$?

a. $-\sqrt{29}$
b. $\left|\sqrt{29}\right|$
c. $-\left|-\sqrt{29}\right|$
d. $\left|\sqrt{-29}\right|$

____ 25. What is $\left|\sqrt{7}\right|$ to the nearest tenth?

a. 2.7
b. 2.65
c. 2.6
d. –2.6

____ 26. Which number is not an irrational number?

a. 1.414213562...
b. 2.333333333...
c. 3.141592653...
d. –2.23606797...

____ 27. Which number is an irrational number?

a. 4.358898944...
b. 8.234234234...
c. –1.6
d. 3.166666666...

____ 28. How can you tell if a decimal is an irrational number?

a. The decimal terminates.
b. The decimal repeats.
c. The decimal terminates and repeats.
d. The decimal does not terminate or repeat.

____ 29. Write all names that apply to the number $\frac{44}{11}$.

a. rational
b. real
c. real, rational, integer, whole, natural
d. real, irrational

____ 30. Order the numbers –4, –8.2, 6, –9, and $1\frac{3}{4}$ from least to greatest.

a. –9, –8.2, –4, $1\frac{3}{4}$, 6
b. –9, –8.2, $1\frac{3}{4}$, 6
c. 6, $1\frac{3}{4}$, –4, –8.2, –9
d. –4, –8.2, 6, –9, $1\frac{3}{4}$

____ 31. What does the number of significant digits tell you about a measurement?

a. how precise the measurement is
b. the number of non-zero digits the measurement has
c. the number of digits you are sure of in the measurement
d. the number of digits you estimate in the measurement

____ 32. Four students take the same measurement.

Jane gives her measurement to 3 significant digits.
Monique gives her measurement to 5 significant digits.
Emil gives his measurement to 4 significant digits.
Andre gives his measurement to 2 significant digits.

Whose measurement is most precise?

a. Jane
b. Monique
c. Emil
d. Andre

____ 33. Which digits are significant digits in 0.01205?

a. 1, 2, 0, and 5
b. 0, 0, 1, 2, 0, and 5
c. 1, 2, and 5
d. 0, 1, 2, 0, and 5

____ 34. Which number does not have 4 significant digits?

a. 41.30
b. 3.501
c. 1.000
d. 0.320

____ 35. Round 119,345 to 2 significant digits.

a. 110,000
b. 119,000
c. 119,350
d. 120,000

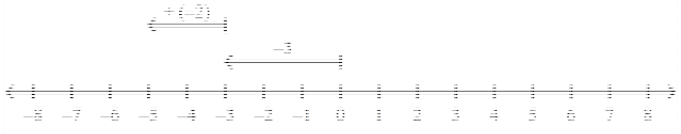
____ 36. Round 0.0012572 to 4 significant digits.

a. 0.001
b. 0.001258
c. 0.001257
d. 0.0013

____ 37. Use a number line to find the sum 3 + 3.

a. –6
b. 0
c. 6
d. 3

____ 38. Use a number line to find the sum –3 + (–2).



a. 5
b. –3
c. –5
d. –2

____ 39. Find the sum 44 + 9.
a. 35
b. 53
c. –35
d. –53

____ 40. Find the sum 24 + (–24).
a. 48
b. 1
c. 0
d. –48

____ 41. Find the sum –11 + 11.
a. 1
b. 22
c. –22
d. 0

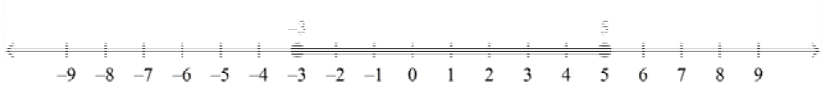
____ 42. Use a number line to find the sum –1 + 1.

a. 1
b. 1
c. –1
d. 0

____ 43. The income from the Spanish Club's bake sale was $240. Expenses for the sale totaled $40. Use integer addition to find the total profit or loss from the bake sale.
a. profit of $280
b. profit of $200
c. profit of $240
d. loss of $40

____ 44. Find the difference –31 – 13.
a. –18
b. 18
c. –44
d. 44

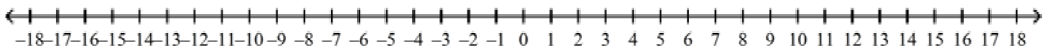
____ 45. Use a number line to find the distance between 5 and –3.



a. 1
b. 8
c. 6
d. –8

____ 46. Find the distance between 9 and –6.
a. 16
b. 15
c. –15
d. 1.5

____ 47. Use a number line to find the product 5(–3).



a. –15
b. –2
c. 15
d. 2

____ 48. Find the product –5 • (–4).
a. –9
b. 9
c. –20
d. 20

____ 49. A submarine started at the surface of the water and was moving down at –15 kilometers per minute toward the ocean floor. The submarine traveled at this rate for 52 minutes before coming to rest on the ocean floor. What is the depth of the ocean floor?
a. –768 kilometers
b. 37 kilometers
c. –780 kilometers
d. –792 kilometers

____ 50. Find the quotient –62 ÷ (–2).
a. 31
b. –60
c. –64
d. –31

____ 51. Find the quotient 128 ÷ (–4).
a. 124
b. 132
c. –32
d. 32

____ 52. Miguel spends $35 a day for 4 days. He earns $21 a day for 5 days. Does Miguel end up with more or less money than he started with? By how much?
a. Miguel ends up with $35 more than he started with.
b. Miguel ends up with $35 less than he started with.
c. Miguel ends up with $91 more than he started with.
d. Miguel ends up with $91 less than he started with.

____ 53. Simplify the expression 45 + 16 × 2 ÷ 4 – 6.
a. 24.5
b. 13.25
c. 47
d. 29

____ 54. Add. Express your answer in simplest form.

$\frac{2}{7} + \frac{1}{8}$

a. $\frac{23}{56}$
c. $\frac{23}{14}$
b. $\frac{1}{5}$
d. $\frac{9}{56}$

____ 55. There are two bookcases against a wall. If one takes up $\frac{2}{5}$ of the wall and the other takes up $\frac{1}{7}$ of the wall, how much of the wall is covered by bookcases?

a. $\frac{19}{35}$ of the wall
c. $\frac{19}{10}$ of the wall
b. $\frac{1}{4}$ of the wall
d. $\frac{18}{35}$ of the wall

____ 56. Subtract. Express your answer in simplest form.

$\frac{5}{6} - \frac{3}{6}$

a. $\frac{4}{3}$
c. $\frac{2}{3}$
b. $\frac{1}{3}$
d. $-\frac{4}{3}$

____ 57. Subtract. Express your answer in simplest form.

$\frac{5}{9} - \frac{3}{7}$

a. $\frac{8}{63}$
c. $\frac{62}{63}$
b. $\frac{1}{8}$
d. $\frac{4}{9}$

____ 58. Two carpenters are building a fence. After 5 minutes, one carpenter is finished $\frac{4}{8}$ of the way and the other is finished $\frac{2}{5}$ of the way. How much of the way ahead of the second carpenter is the first carpenter?

a. $\frac{1}{8}$ of the way
c. $\frac{1}{4}$ of the way
b. $\frac{9}{10}$ of the way
d. $\frac{1}{10}$ of the way

____ 59. Multiply. Express your answer in simplest form.

$-\frac{7}{9} \bullet \frac{1}{2}$

a. $-\frac{7}{18}$
c. $-\frac{7}{3}$
b. $-\frac{14}{9}$
d. $-\frac{7}{54}$

____ 60. Divide. Express your answer in simplest form.

$\frac{3}{10} \div \frac{13}{14}$

a. $\frac{21}{65}$
c. $\frac{140}{39}$
b. $\frac{65}{21}$
d. $\frac{39}{140}$

____ 61. How many $\frac{3}{8}$-foot pieces of wood can you cut from a board that is $1\frac{7}{8}$ feet long?

a. $\frac{45}{64}$ pieces of wood
c. $\frac{1}{5}$ pieces of wood
b. 3 pieces of wood
d. 5 pieces of wood

____ 62. Four bags of potatoes weigh 3.35 pounds, 4.894 pounds, 5.6 pounds, and 4.95 pounds. What is the total weight of the bags?

a. 187.94 pounds
c. 1.8794 pounds
b. 18.794 pounds
d. 20.62 pounds

____ 63. Find 70% of 90.

a. 63
c. 6300
b. 128.57
d. 59.4

____ 64. Multiply.
–4.46 • 11

a. –49.06
c. –48.96
b. –4.906
d. –4.896

____ 65. The average yearly rainfall in Lakeview is 21.55 inches. What is the total amount of rainfall in inches in Lakeview in 5.75 years?

a. 12.39125 inches
c. 1,239.125 inches
b. 27.3 inches
d. 123.9125 inches

____ 66. Divide.
48.18 ÷ (–21.9)

a. –0.22
c. 22
b. –2.2
d. 2.2

____ 67. Joe works in a music store and earns 18.5% commission on each sale. If Joe sells an organ and earns $82.00, what is the price of the organ? Round your answer to the nearest cent.

a. $4.43
c. $508.11
b. $443.24
d. $15.17

____ 68. Simplify the expression $0.3h + 0.4h$.

a. $0.3h$
c. $0.7h$
b. $0.4h$
d. $7h$

____ 69. Simplify the expression $s + \frac{3}{5}s$.

a. $\frac{8}{5}s$
c. $\frac{8}{10}s$
b. $\frac{4}{5}s$
d. $\frac{4}{6}s$

____ 70. Simplify the expression $\frac{2}{3}b + \frac{3}{4}b$.

a. $\frac{5}{7}b$
c. $\frac{17}{24}b$
b. $\frac{5}{12}b$
d. $\frac{17}{12}b$

____ 71. Simplify the expression $1.8w - 0.6w$.

a. $1.2w$
b. $0.2w$
c. $2.4w$
d. $1.4w$

____ 72. Simplify the expression $n - 0.1n$.

a. $-0.1n$
b. $0.9n$
c. $1.1n$
d. $1.9n$

____ 73. Simplify the expression $\frac{7}{12}a - \frac{1}{3}a$.

a. $\frac{2}{3}a$
b. $\frac{1}{2}a$
c. $\frac{11}{12}a$
d. $\frac{1}{4}a$

____ 74. Simplify the expression $\frac{1}{2}k - \frac{3}{7}k$.

a. $-\frac{2}{5}k$
b. $\frac{2}{7}k$
c. $\frac{1}{14}k$
d. $\frac{13}{14}k$

____ 75. Simplify the expression $3.6r + 2.2r - 4$.

a. $5.8r - 4$
b. $1.8r$
c. $1.4r - 4$
d. $9.8r$

____ 76. Simplify the expression $1.3g - 0.7g + 2$.

a. $2g + 2$
b. $0.6g + 2$
c. $0.6g$
d. $2.6g$

____ 77. Simplify the expression $\frac{1}{3}x + \frac{5}{9}x - 1 + 4$.

a. $\frac{1}{2}x + 3$
b. $\frac{8}{9}x + 3$
c. $\frac{8}{9}x + 5$
d. $\frac{2}{3}x + 3$

____ 78. Simplify the expression $\frac{1}{2}x + \frac{3}{8}x - 3 - 2$.

a. $\frac{2}{5}x - 5$
b. $\frac{7}{8}x - 1$
c. $\frac{7}{8}x - 3 - 2$
d. $\frac{7}{8}x - 5$

____ 79. Simplify the expression $\frac{1}{8}t + \frac{1}{4}t + \frac{3}{8}t$.

a. $\frac{1}{4}t$
b. $\frac{5}{8}t$
c. $\frac{3}{4}t$
d. $\frac{3}{8}t$

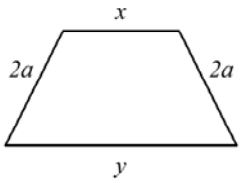
____ 80. Simplify the expression $2.5m - 1.3m + 0.8m$.

a. $2m$
c. $0.4m$
b. $4.6m$
d. $1.2m$

____ 81. Simplify the expression $9x^3 + 49x^3 - 63b^4$.

a. $58x^3 - 9b^4$
c. $58x^3 - 63b^4$
b. $58x^6 - 63b^4$
d. $9x^3 - 112x^3b^4$

____ 82. Write an expression for the perimeter of the trapezoid. Then, simplify the expression.



a. $2a + x + 2a + y$; $4a + x + y$
c. $2a + x + 2a + y$; $4a^2 + x + y$
b. $2a + x + 2a + y$; $4a + xy$
d. $2a + x + 2a + y$; $4axy$

____ 83. Simplify the expression $6s + 9c - 2s$.

a. $8s + 9c$
c. $4s + 9c$
b. $15c + 2s$
d. $13sc$

____ 84. Simplify the expression $6y - x - 2y + 9x$.

a. $4y - 10x$
c. $4y + 8x$
b. $5y - 7x$
d. $12xy$

____ 85. Simplify the expression $\frac{2}{3}x - \frac{1}{6}x + \frac{2}{5}z + \frac{6}{15}z$.

a. $-\frac{1}{3}x + \frac{2}{5}z$
c. $\frac{1}{6}x + \frac{8}{15}z$
b. $\frac{5}{6}x + \frac{4}{5}z$
d. $\frac{1}{2}x + \frac{4}{5}z$

____ 86. Expand the expression $\frac{1}{5}(25x + 30)$.

a. $5x + 6$
c. $125x + 150$
b. $5x + 30$
d. $25x + 6$

____ 87. Expand the expression $\frac{1}{7}(3x - 14)$.

a. $21x - 2$
c. $\frac{3}{7}x + 2$
b. $3x - 2$
d. $\frac{3}{7}x - 2$

____ 88. Expand the expression $0.6(3x + 4)$.

a. $3.6x + 4.6$
c. $1.8x + 4$
b. $1.8x + 2.4$
d. $0.18x + 0.24$

____ 89. Expand the expression $0.3(-0.5x - 0.7)$.

a. $-1.5x - 2.1$
c. $-0.15x - 0.21$
b. $-0.15x + 0.21$
d. $-0.15x - 0.7$

____ 90. Which expression is equivalent to $1.6x - 4.8$?

a. $0.4(4x - 1.2)$
c. $0.8(2x - 0.6)$
b. $0.2(8x + 24)$
d. $0.8(2x - 6)$

____ 91. Expand the expression $-7(2x - 4)$.

a. $14x - 28$
c. $-14x - 28$
b. $-14x + 28$
d. $-14x - 4$

____ 92. Expand the expression $-2(-0.1x + 0.4)$.

a. $-0.2x - 0.8$
c. $0.2x - 0.8$
b. $0.02x - 0.8$
d. $0.2x + 0.4$

____ 93. Expand and simplify the expression $2(5m + 4m)$.

a. $18m$
c. $13m$
b. $10m + 8m$
d. $14m$

____ 94. Expand and simplify the expression $8(3t - 7) - t$.

a. $23t + 56$
c. $23t - 7$
b. $25t - 56$
d. $23t - 56$

____ 95. Expand and simplify the expression $3x + 6(5x - 7b)$.

a. $3x - 72xb$
c. $33x - 42b$
b. $33x + 42b$
d. $33x - 7b$

____ 96. Factor the expression $12a + 21b$.

a. $3(4a + 7b)$
c. $12(a + 2b)$
b. $3(4a + 21b)$
d. This expression cannot be factored.

____ 97. Factor the expression $4x - 24y$.

a. $4(x + 6y)$
c. $4(x - 6y)$
b. $2(2x - 12y)$
d. $4(x - 12y)$

____ 98. Factor the expression $-6y - 36$.

a. $-6(y - 6)$
c. $-6(y + 6)$
b. $6(-y - 6)$
d. $-6(y - 36)$

____ 99. Factor the expression $-2q - 8r - 6$.

a. $-2(q + 4r + 3)$
c. $-2(q - 4r - 3)$
b. $2(-q - 4r - 3)$
d. $-(2q + 8r + 6)$

____ 100. Write the phrase as an algebraic expression.
4 times the sum of a number and 20

a. $20 \div y$
c. $4(y + 20)$
b. $20 + y$
d. $4y - 20y$

____ 101. A fence has a total of 650 planks. Violeta paints n planks each day. Write an algebraic expression for how many days it will take Violeta to finish painting the fence.

a. $\frac{650}{n}$
c. $650n$
b. $\frac{n}{650}$
d. $650 - n$

____ 102. It takes 78 days to create a custom motorcycle. Write an algebraic expression to describe the number of days it takes to create n custom motorcycles. How many days will it take to create 6 custom motorcycles?

a. $78 + n$; 84 days
c. $78n$; 468 days
b. $78 + 78n$; 546 days
d. $\frac{78}{n}$; 13 days

____ 103. Jake has v video games. Emmett has one third as many video games as Jake plus x more. Write an expression to represent the number of video games Jake and Emmett have in all.

a. $\frac{1}{3}v + x$
c. $\frac{2}{3}v + x$
b. $1\frac{1}{3}v + x$
d. $2\frac{1}{3}v + x$

____ 104. Carlotta has q quarters and n nickels. What is an expression for the amount of money she has in quarters and nickels?

a. $0.25q$
c. $0.05n$
b. $0.25q + 0.05n$
d. $q + n$

____ 105. Sabeeka is buying drinks for a group of people at the movie theater. Some people wanted large drinks, a different number of people wanted medium drinks, and twice as many people wanted small drinks as the number of people who wanted medium drinks. Large drinks cost $2.50, medium drinks cost $2, and small drinks cost $1. Write an expression to represent the amount of money Sabeeka spends on drinks.

a. $2.5x + 4y$
c. $x + 3y$
b. $2.5x + 2y$
d. $4.5x + 4y$

____ 106. Write the phrase as an algebraic expression.
7 times the sum of a number and 4

a. $7 + 4$
c. $7(y + 4)$
b. $7y + 4y$
d. $7y + 4$

____ 107. Jen earned x dollars on Saturday and y dollars on Sunday. She plans to save 25% of the money she earned over the weekend and spend the rest. Write an expression for the amount of money Jen saves.

a. $0.25x + y$
c. $x + y$
b. $25(x + y)$
d. $0.25(x + y)$

____ 108. Antonio has a apples. He gives 24 away to the students in his class. He divides the rest of the apples equally among his 3 brothers and sisters. Which expression does not represent the number of apples each of his brothers and sisters gets?

a. $\frac{1}{3}(a - 24)$
c. $\frac{1}{3}a - 24$
b. $\frac{1}{3}a - 8$
d. $\frac{1}{3}a - \frac{1}{3}(24)$

____ 109. In an online media store, downloaded songs cost $3 each and books cost $9 each. Taji paid $7 in sales tax when he purchased 15 songs and 3 books. Write and simplify an expression to show how much Taji spent on everything, including sales tax.

a. $3 + 15 + 9 + 3 + 7$; $37
b. $3 \times 15 + 9 \times 3 + 7$; $223
c. $3 \times 3 + 9 \times 15 + 7$; $151
d. $3 \times 15 + 9 \times 3 + 7$; $79

____ 110. Write an equivalent equation that does not contain fractions. Then solve the equation.

$\frac{1}{2}x + 1 = \frac{5}{7}$

a. $14x + 14 = 70$; $x = 4$
b. $7x + 1 = 10$; $x = 1\frac{2}{7}$
c. $7x + 14 = 10$; $x = 3\frac{3}{7}$
d. $7x + 14 = 10$; $x = -\frac{4}{7}$

____ 111. Write an equivalent equation that does not contain fractions. Then solve the equation.

$\frac{1}{2}x - 6 = \frac{1}{3}$

a. $3x - 36 = 2$; $x = -11\frac{1}{3}$
b. $3x - 6 = 2$; $x = 2\frac{2}{3}$
c. $6x - 36 = 6$; $x = 7$
d. $3x - 36 = 2$; $x = 12\frac{2}{3}$

____ 112. Write an equivalent equation that does not contain decimals. Then solve the equation.

$0.5x - 0.1 = -2.9$

a. $5x - 1 = -29$; $x = -5.6$
b. $50x - 1 = -290$; $x = -5.78$
c. $50x - 1 = -29$; $x = -0.56$
d. $5x - 0.1 = -29$; $x = -5.78$

____ 113. Solve $\frac{f}{77} - \frac{4}{7} = \frac{5}{7}$. Check your answer.

a. $f = -60$
b. $f = 60$
c. $f = 99$
d. $f = -99$

____ 114. Solve $2(a - 5) - 5 = 3$. Check your answer.

a. $a = 9$
b. $a = 12$
c. $a = -9$
d. $a = -12$

____ 115. Solve $4h + 12 = 11 - 39h$. Check your answer.

a. $h = 0$
b. $h = -\frac{1}{43}$
c. $h = -\frac{1}{35}$
d. $h = -\frac{23}{43}$

____ 116. Solve $\frac{9}{11}v - 33 = -\frac{5}{11}v - 6$. Check your answer.

a. $v = 22$
b. $v = 21\frac{3}{14}$
c. $v = -74\frac{1}{4}$
d. $v = 30\frac{9}{14}$

____ 117. Solve.

$-4(24 + 8y) = -64$

a. $y = 4$
b. $y = -11$
c. $y = -1$
d. $y = 5$

____ 118. Solve $2(a - 4) + 7 = -19$. Check your answer.

a. $a = 6$
c. $a = -9$
b. $a = -6$
d. $a = 9$

____ 119. Solve.
$4(6 - 8x - 9x) + 7(9x + 2) = 23$

a. $x = 2$
c. $x = 3$
b. $x = 4$
d. $x = 32$

____ 120. Solve $d + 3 \leq 2.4$. Check your answer.

a. $d \leq 5.4$
c. $d \geq -0.6$
b. $d \geq 5.4$
d. $d \leq -0.6$

____ 121. Solve $b - 3.5 > 0.5$.

a. $b > 4$
c. $b > -4$
b. $b > 3$
d. $b > -3$

____ 122. Solve $x + 9\frac{2}{3} \leq 3\frac{3}{6}$.

a. $x \leq 13\frac{1}{6}$
c. $x \geq -6\frac{1}{6}$
b. $x \leq -6\frac{1}{6}$
d. $x \geq 13\frac{1}{6}$

____ 123. Solve $\frac{y}{3} > 0.6$. Check your answer.

a. $y > 0.2$
c. $y < 1.8$
b. $y < 0.2$
d. $y > 1.8$

____ 124. Solve $8w < 39$. Check your answer.

a. $w > 4\frac{7}{8}$
c. $w < 4\frac{7}{8}$
b. $w > 312$
d. $w < 312$

____ 125. Solve $6(s - 8) \leq -18$.

a. $s \leq -5$
c. $s \leq 5$
b. $s \leq -\frac{5}{3}$
d. $s \leq -11$

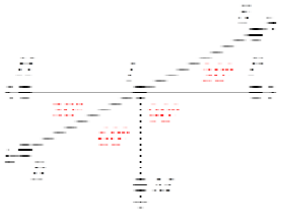
____ 126. Solve $-0.25 + 1.75x < -1.75 + 2.25x$.

a. $x < 3$
c. $x < 6$
b. $x < 0.33$
d. $3 < x$

____ 127. The 19 members of a football team are trying to raise at least $1266.00 to cover the traveling cost for a holiday tournament. If they have already raised $451.00, at least how much should each member still raise, on average, to meet the goal?

a. at least $815.00
c. at least $15,485.00
b. at least $90.37
d. at least $42.90

____ 128. Use the diagram to tell whether the angles $\angle MIB$ and $\angle BIH$ are complementary, supplementary, or neither.



a. neither b. complementary c. supplementary

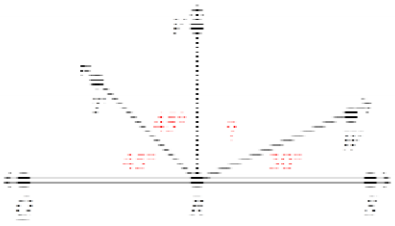
____ 129. Find the unknown angle measure. The angles are complementary.

a. $b = 58°$
b. $b = 68°$
c. $b = 122°$
d. $b = 148°$

____ 130. Find the unknown angle measure. The angles form a straight line.

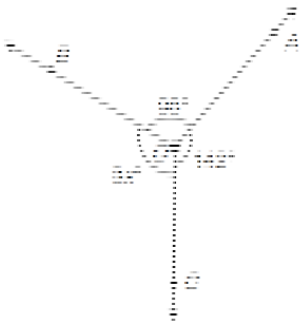
a. $c = 112°$
b. $c = 12°$
c. $c = 102°$
d. $c = 168°$

____ 131. Find the unknown angle measure. The angles form a straight line.



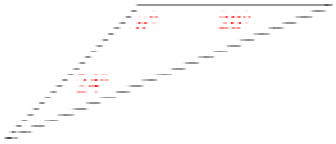
a. 45°
b. 60°
c. 90°
d. 70°

____ 132. What is the value of x in the diagram?



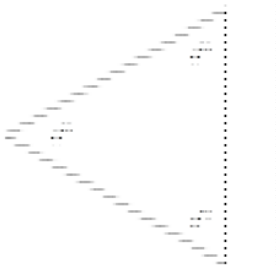
a. 30
b. 40
c. 120
d. 300

____ 133. Find the unknown angle measure.



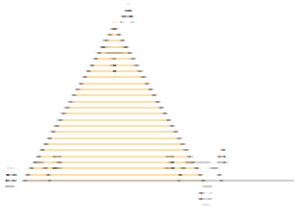
a. 24°
b. 136°
c. 20°
d. 44°

____ 134. Find the unknown angle measures in the equilateral triangle.



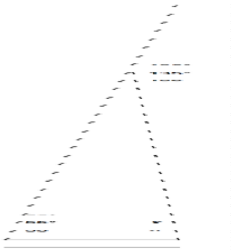
a. $d = 180°$
b. $d = 60°$
c. $d = 120°$
d. $d = 30°$

____ 135. What statement is true about the diagram?



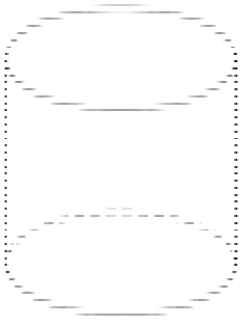
a. $m\angle 2 + m\angle 3 = m\angle 4$
b. $m\angle 1 + m\angle 2 = m\angle 4$
c. $m\angle 1 + m\angle 3 = m\angle 4$
d. $m\angle 1 + m\angle 4 = m\angle 2$

____ 136. What is the value of *x*?



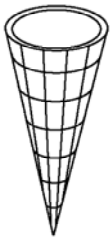
a. 45°
b. 125°
c. 80°
d. 190°

____ 137. Name the solid.



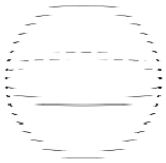
a. cone
b. prism
c. sphere
d. cylinder

____ 138. Name the three-dimensional figure represented by the object.



a. cylinder
b. prism
c. sphere
d. cone

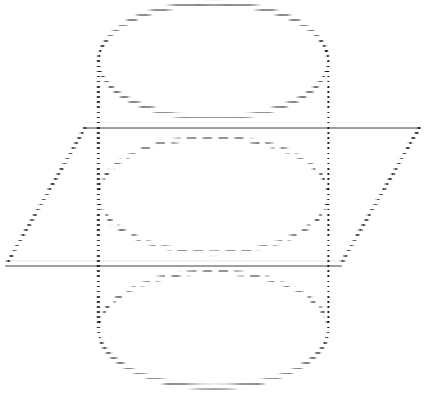
____ 139. Name the figure.



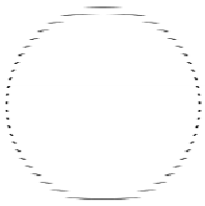
a. cone
b. polyhedron
c. sphere
d. prism

____ 140. Which statement is false?
a. A sphere has a curved surface.
b. Every point on a sphere is an equal distance from a point outside of the sphere.
c. The distance from the center to any point on the surface of a sphere is called a radius.
d. A hemisphere is half of a sphere.

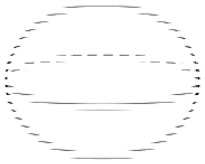
____ 141. Identify the cross section that best matches the given figure.



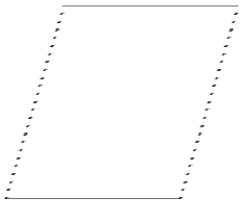
a.



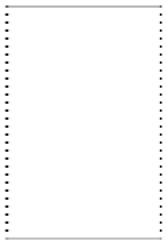
b.



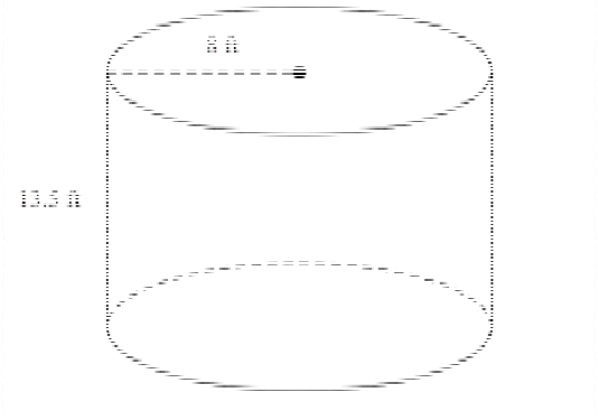
c.



d.



____ 142. Find the volume of the cylinder. Use 3.14 for π. Round your answer to the nearest tenth.

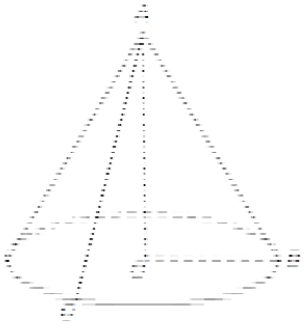


a. 4,578.1 ft^3
b. 2,713 ft^3
c. 10,851.8 ft^3
d. 339.1 ft^3

____ 143. Find the volume of the cone. Use 3.14 for π. If necessary, round your answer to the nearest tenth.

a. 44.2 ft^3
b. 574.9 ft^3
c. 1724.6 ft^3
d. 88.4 ft^3

____ 144. Name the slant height of the cone shown.



a. $\overline{AO}$
b. $\overline{BO}$
c. $\overline{AC}$
d. $\overline{BC}$

____ 145. Find the volume of a sphere with a radius of 5.2 m, both in terms of π and as a decimal. Use 3.14 for π. Round your answers to the nearest tenth.

a. 46.9π m$^3 \approx 147.2$ m^3
b. 187.5π m$^3 \approx 588.7$ m^3
c. 108.2π m$^3 \approx 339.6$ m^3
d. 105.5π m$^3 \approx 331.1$ m^3

Numeric Response

146. Write the fraction $\frac{5}{65}$ as $\frac{m}{n}$ in simplest form where *m* and *n* are integers.

147. What is the area of a rectangle, in square centimeters, with a length of 4.25 cm and a width of 5.3 cm? Give your answer to 3 significant digits.

148. Find the sum $-5 + (-2) + 10$.

149. At Daisy's Deli, Daisy tracks her monthly profit to determine the success of her business. A negative profit means that Daisy has debt. In July, her profit was –$20. In August, her profit was $160. Find the difference between the profits in July and August.

150. The ocean floor is at –94 m. Antonio has reached –12 m. If he continues to move down at –4 m per minute, at what meter will he be from the ocean floor after 3 minutes?

151. A gift store owner used 9 rolls of wrapping paper to wrap his customers' gifts last week. Each roll was $66\frac{1}{2}$ in. long. How many gifts did he wrap if a $9\frac{1}{2}$ in. long piece of wrapping paper was used to wrap each gift?

152. A costume designer is preparing costumes for 22 dancers. She pays $373.78 for all of the materials. She also buys gloves, that are on sale, for all the dancers. Each pair of gloves costs $4.30. How much is the costume designer's expense for each dancer?

Short Answer

153. Katelyn has read 5 out of the 8 books he is required to read for his literature class. What portion of the books has he read? Write your answer as a decimal.

154. Consider the numbers $5\frac{2}{5}$, 5.2, 5.02, $5\frac{1}{4}$, and 5.333.
    a. Order the numbers from least to greatest.
    b. Write each of the fractions as a decimal, and each of the decimals as a fraction in simplest form.

155. Ramón borrowed $88 from his sister Lydia to buy a new bike. So far he has paid her $18, $34, and $25. How much does he still owe her? Show your work.

156. This morning at 8:00, the temperature was –7°F. Yesterday morning, the temperature was 6°F colder. What was yesterday's temperature?

157. The newest fast-food chain in town, Sardines-to-Go, lost $6024 in its first three months of business.
    a. What was the average monthly loss?
    b. If the owner decides to close the restaurant when the losses reach $10,000, and if losses continue at this same rate, after how many more months will the restaurant close?

158. If $\frac{3}{7}$ of a pizza is eaten for lunch and $\frac{2}{5}$ is eaten for dinner, how much of the pizza is eaten?

159. A log weighing 4.56 pounds is split into two pieces. If one of the pieces weighs 2.79 pounds, what does the other one weigh? Show your work.

160. Identify the like terms in the expression $0.8y + 1.4y + 4$. Then, simplify the expression.

161. Is the expression $-8m - 3$ factored completely? Why or why not?

162. You are given the following problem to solve.
The area of a rectangle is $12m - 30n$ square units. The width of the rectangle is 6 units. What is an expression for the length of the rectangle?

Draw a diagram in order to help you solve the problem.

163. Twenty less than eight times a number is seventy-six.
   a. Write an equation for the sentence.
   b. Solve the equation.

164. By dividing the number of houses in Antonio's subdivision by 4 and adding 15, you can find the number of houses in Hector's subdivision. If Hector has 47 houses in his subdivision, how many houses are in Antonio's subdivision?

165. Silvia's test scores are 86, 78, and 92. What must she score on her fourth test in order to have an average of 85 for all four tests?

166. A roller-skating rink charges nonmembers $6 per day to use the rink plus $2.50 per day to rent skates. Members of the rink pay an annual fee of $90 plus $1 per day to rent skates. How many days must both a member and a nonmember use the rink in one year so that both pay the same amount?

167. Four friends spent a weekend mowing lawns to raise money. After reimbursing their parents $24 dollars for gas and equipment and then splitting the profits equally, they each took home at least $43. At least how much money did the students total over the weekend?

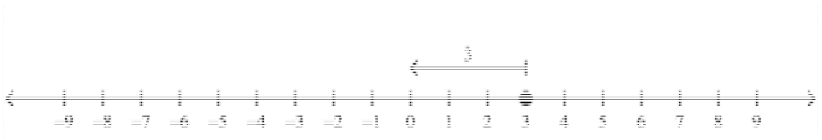
168. Olivia has saved $178.50 to spend on the 7 members of her family for the holidays. Olivia wants to spend the same amount on each family member.
   a. At most, how much can she spend on any one present?
   b. Graph the solution set on a number line.

169. Two lines intersect in a plane and form four angles. One of the angles formed by this intersection is a 53° angle. What are the measures of the other three angles? Explain your answer.

Rising 8th Summer Review
Answer Section

MULTIPLE CHOICE

1. ANS: A
The absolute value of a number is its distance from 0 on the number line.
$\left| \frac{33}{11} \right| = |3| = 3$



	Feedback
A	Correct!
B	Absolute value is the number's distance from 0 on the number line.
C	Absolute value cannot be negative.
D	Absolute value is the number's distance from 0 on the number line.

PTS: 1 DIF: Average OBJ: 1-1.1 Find the Absolute Values of Positive Fractions
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: positive | absolute value

2. ANS: D
The absolute value of a number is its distance from 0 on the number line.

The decimal –0.25 is 0.25 units from 0, so |–0.25| = 0.25.

	Feedback
A	Use a number line to help you.
B	Find the distance from 0.
C	Absolute value is always positive.
D	Correct!

PTS: 1 DIF: Average
OBJ: 1-1.2 Find the Absolute Values of Negative Fractions and Decimals
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: negative | decimal | absolute value

3. ANS: B
The absolute value of a negative fraction is the distance of the negative fraction from 0.
$\left|-\frac{18}{33}\right| = \frac{6}{11}$

	Feedback
A	Find the distance from 0.
B	Correct!
C	Absolute value is always positive.
D	Absolute value is always positive.

PTS: 1 DIF: Average
OBJ: 1-1.2 Find the Absolute Values of Negative Fractions and Decimals
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: negative | fraction | absolute value

4. ANS: A
The absolute value of a negative fraction is the distance of the negative fraction from 0.
$\left|-\frac{25}{15}\right| = \frac{5}{3}$

	Feedback
A	Correct!
B	Absolute value is always positive.
C	Absolute value is always positive.
D	Find the distance from 0.

PTS: 1 DIF: Average
OBJ: 1-1.2 Find the Absolute Values of Negative Fractions and Decimals
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: negative | fraction | absolute value

5. ANS: B
Since 2 is a common factor, divide the numerator and denominator by 2.
$\frac{8}{22} = \frac{8 \div 2}{22 \div 2} = \frac{4}{11}$

	Feedback
A	Simplify both the numerator and the denominator.
B	Correct!
C	Make the numerator and the denominator relatively prime.
D	To simplify a fraction, divide both the numerator and denominator by the same nonzero integer.

PTS: 1 DIF: Average OBJ: 1-1.3 Express Integers and Fractions in m/n Form
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: fraction | simplify | rational number

6. ANS: B
Negative and positive integers have 1 in the denominator.

	Feedback
A	Find a fraction that is equivalent to the integer.
B	Correct!
C	Negative and positive integers have 1 in the denominator.
D	This fraction is undefined.

PTS: 1 DIF: Average OBJ: 1-1.3 Express Integers and Fractions in m/n Form
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: fraction | simplify | rational number

7. ANS: D
Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.

	Feedback
A	Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.
B	Use the place value of the last digit to the right of the decimal point as the denominator of the fraction.
C	The answer should be in the form of $\frac{m}{n}$ where m and n are integers.
D	Correct!

PTS: 1 DIF: Average OBJ: 1-1.4 Express Decimals in m/n Form
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: decimal | fraction | rational number

8. ANS: B
The digit farthest to the right is in the thousandths place. So, write 268 as the numerator with 1000 as the denominator. Then, simplify.
$0.268 = \frac{268}{1000} = \frac{67}{250}$

	Feedback
A	First, identify the place value of the digit farthest to the right. Then, write all of the digits after the decimal point as the numerator with the place value as the denominator.
B	Correct!
C	Simplify correctly.
D	First, identify the place value of the digit farthest to the right. Then, write all of the digits after the decimal point as the numerator with the place value as the denominator.

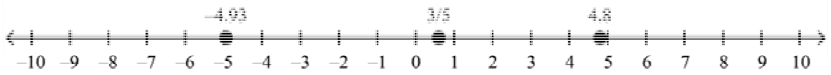
PTS: 1 DIF: Average OBJ: 1-1.4 Express Decimals in m/n Form
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: decimal | fraction | rational number

9. ANS: C
There is a number to the left of the decimal point, so write that number as the whole number. Next, write the decimal part as a fraction over 100. Then, write as an improper fraction and simplify.

	Feedback
A	The answer should be in the form of $\frac{m}{n}$ where m and n are integers.
B	There is a number to the left of the decimal point, so write that number as the whole number first.
C	Correct!
D	There is a number to the left of the decimal point, so write that number as the whole number first.

PTS: 1 DIF: Average OBJ: 1-1.4 Express Decimals in m/n Form
TOP: 1-1 Representing Rational Numbers on the Number Line
KEY: decimal | fraction | rational number | improper fraction

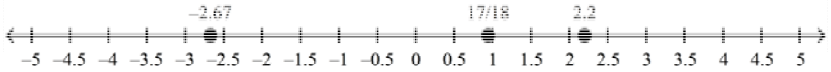
10. ANS: B
First, find the integers that each rational number lies between. Then, graph a number line and label the integers. Next, divide the distance between the integers into equal segments. Finally, use the segments to locate the points.



	Feedback
A	Find the integers that each rational number lies between.
B	Correct!
C	Check the signs.
D	Graph the points correctly.

PTS: 1 DIF: Average OBJ: 1-1.5 Locate Rational Numbers on the Number Line
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: rational number | number line

11. ANS: C
First, find the integers that each rational number lies between. Then, graph a number line and label the integers. Next, divide the distance between the integers into equal segments. Finally, use the segments to locate the points.



	Feedback
A	Find the integers that each rational number lies between.
B	Check the signs.
C	Correct!
D	Graph the points correctly.

PTS: 1 DIF: Average OBJ: 1-1.5 Locate Rational Numbers on the Number Line
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: rational number | number line

12. ANS: C
Divide the number of questions in the game by the number correctly answered on the first try.

$\frac{66}{75} = 75\overline{)\,66.00}^{\,0.88}$

	Feedback
A	Divide the number of questions in the game by the number correctly answered on the first try.
B	Check your calculations.
C	Correct!
D	Check your calculations.

PTS: 1 DIF: Average
OBJ: 1-2.1 Write Rational Numbers as Terminating Decimals Using Long Division
NAT: 7.NS.2.d TOP: 1-2 Writing Rational Numbers as Decimals
KEY: convert | decimal | fraction | rational number

13. ANS: A
Both fractions are positive, so write them with a common denominator. Then, compare the numerators to determine which fraction is greater.

	Feedback
A	Correct!
B	To compare fractions with unlike denominators, first write equivalent fractions with a common denominator. Then, compare the numerators.

PTS: 1 DIF: Average OBJ: 1-2.4 Compare Rational Numbers
TOP: 1-2 Writing Rational Numbers as Decimals KEY: compare | fraction | rational

14. ANS: A
First, find the absolute values of the two numbers. Then, compare their absolute values.

The two numbers are negative so the number with the greater absolute value is farther to the left of 0. It is the lesser number.

	Feedback
A	To compare negative rational numbers, find the absolute values of the two numbers and compare their absolute values.
B	Correct!

PTS: 1 DIF: Average OBJ: 1-2.4 Compare Rational Numbers
TOP: 1-2 Writing Rational Numbers as Decimals KEY: compare | fraction | rational

15. ANS: B
Line up the decimal points.
Compare the tenths place. If the tenths are the same, then compare the hundredths place.
$0.25 < 0.65$.

	Feedback
A	Line up the decimal points and compare the digits from left to right.
B	Correct!

PTS: 1 DIF: Average OBJ: 1-2.4 Compare Rational Numbers
TOP: 1-2 Writing Rational Numbers as Decimals KEY: compare | decimal | rational

16. ANS: D

You can graph any rational number of the form $\frac{m}{n}$ on a number line, including the integers. However, these numbers do not complete the number line. In order to complete the number line, you need to include the irrational numbers as well.

So, you can graph both rational and irrational numbers on a number line.

	Feedback
A	You can graph more than just the integers on a number line.
B	You can graph more than just the rational numbers on a number line.
C	You can graph more than just the irrational numbers on a number line.
D	Correct!

PTS: 1 DIF: Average OBJ: 1-3.1 Understand Irrational Numbers on the Number Line
TOP: 1-3 Introducing Irrational Numbers
KEY: rational number | irrational number | number line

17. ANS: C
An irrational number is a number that cannot be expressed as a ratio of two integers. For that reason, irrational numbers have decimal values which do not terminate or repeat. Irrational numbers can be either positive or negative.

So, irrational numbers have decimal values which do not terminate or repeat.

	Feedback
A	Irrational numbers cannot be expressed as a ratio of two integers. Think about the definition of an irrational number.
B	Irrational numbers can be graphed on a number line.
C	Correct!
D	Irrational numbers can be negative.

PTS: 1 DIF: Average OBJ: 1-3.2 Locate (Sqrt) 2 on the Number Line
TOP: 1-3 Introducing Irrational Numbers KEY: irrational number | rational number

18. ANS: C

Since $\sqrt{2}$ cannot be written in the form $\frac{m}{n}$, it is an irrational number. So, any multiple of $\sqrt{2}$, for example $2\sqrt{2}$ or $-\sqrt{2}$, is also irrational. The number $\sqrt{2^2}$ is equal to 2, which is a rational number. So, $\sqrt{2^2}$ is not an irrational number.

	Feedback
A	This number is irrational. Think about the definition of an irrational number.
B	This number is irrational. Think about the definition of an irrational number.
C	Correct!
D	This number is irrational. Think about the definition of an irrational number.

PTS: 1 DIF: Average OBJ: 1-3.2 Locate (Sqrt) 2 on the Number Line
TOP: 1-3 Introducing Irrational Numbers
KEY: irrational number | rational number | square root

19. ANS: A

Fractions with a denominator of 0 and square roots of negative numbers are not real numbers.
A rational number can be written as a fraction with a non-zero denominator. Rational numbers include integers, fractions, terminating decimals, and repeating decimals.
An irrational number cannot be expressed as a terminating decimal or repeating decimal.

	Feedback
A	Correct!
B	Irrational numbers cannot be expressed with a finite number of digits.
C	Dividing by a 0 or taking the square root of a negative number will not produce a real number.

PTS: 1 DIF: Average OBJ: 1-3.3 Examples of Irrational Numbers
TOP: 1-3 Introducing Irrational Numbers KEY: classify | rational number | irrational

20. ANS: B

You know that $\sqrt{1} = 1$ and $\sqrt{4} = 2$. Since $\sqrt{2}$ is between $\sqrt{1}$ and $\sqrt{4}$, you know that $\sqrt{2}$ will be between $\sqrt{1} = 1$ and $\sqrt{4} = 2$. The only point that has a value that is between 1 and 2 is point B, so point B must represent $\sqrt{2}$.

	Feedback
A	This point represents the square root of 4.
B	Correct!
C	Look at the number line again. Think about perfect squares that you know are close to the square root of 2.
D	This point represents the square root of 1.

PTS: 1 DIF: Average
OBJ: 1-3.4 Use Area of Squares to Locate Irrational Numbers Approximately
TOP: 1-3 Introducing Irrational Numbers
KEY: irrational number | number line | square root

21. ANS: C

You know that $\sqrt{16} = 4$ and $\sqrt{25} = 5$. So, you are looking for a number that is between $\sqrt{16}$ and $\sqrt{25}$. The only number that is between $\sqrt{16}$ and $\sqrt{25}$ is $\sqrt{20}$.

	Feedback
A	It is true that 4.5 is between 4 and 5, but the square root of 4.5 is not.
B	The square root of 16 is equal to 4, so it is not between 4 and 5.
C	Correct!
D	The square root of 25 is equal to 5, so it is not between 4 and 5.

PTS: 1 DIF: Average
OBJ: 1-3.4 Use Area of Squares to Locate Irrational Numbers Approximately
TOP: 1-3 Introducing Irrational Numbers
KEY: irrational number | number line | square root

22. ANS: B

From the number line, you can see that the square root is about 3.75. Since $\sqrt{9} = 3$ and $\sqrt{16} = 4$, you know that the square root is between $\sqrt{9}$ or $\sqrt{16}$, but much closer to $\sqrt{16}$. So, you can guess that the square root might be either $\sqrt{14}$ or $\sqrt{15}$.

Using a calculator, you can test each of the answer choices to see which is closest to the value of the point, which looks to be a little less than 3.75.

$\sqrt{14} \approx 3.74$

$\sqrt{15} \approx 3.87$

Since $\sqrt{14}$ is about 3.74, $\sqrt{14}$ is graphed on the number line.

	Feedback
A	The number 3.74 is graphed, not the square root of 3.74.
B	This square root is less than the square root that is graphed.
C	Correct!
D	This square root is greater than the square root that is graphed.

PTS: 1 DIF: Difficult
OBJ: 1-3.5 Use Rational Approximations to Locate Irrational Numbers
TOP: 1-3 Introducing Irrational Numbers
KEY: irrational number | rational number | number line | square root

23. ANS: D

Use a calculator to find an approximation of $\sqrt{17}$.

$\sqrt{17} \approx 4.123105626$

You can round the approximation of $\sqrt{17}$ to 4.12. Since 4.12 is between 4.1 and 4.2, but much closer to 4.1, the graph of $\sqrt{17}$ is:

	Feedback
A	The square root of 17 is between 4.1 and 4.2, but not directly in the middle.
B	The square root of 17 is between 4.1 and 4.2, but it is not equal to 4.1.
C	The square root of 17 is between 4.1 and 4.2, but it is not equal to 4.2.
D	Correct!

PTS: 1 DIF: Average
OBJ: 1-3.5 Use Rational Approximations to Locate Irrational Numbers
TOP: 1-3 Introducing Irrational Numbers
KEY: irrational number | rational number | number line | square root | approximation

24. ANS: B

The absolute value of an irrational number is its distance from 0 on a number line. Just like with rational numbers, numbers that are the same distance from 0 have the same absolute value.

So, $\left|-\sqrt{29}\right| = \left|\sqrt{29}\right|$ because both $-\sqrt{29}$ and $\sqrt{29}$ are the same distance from 0 on a number line.

	Feedback
A	An absolute value is a distance, so it cannot be negative.
B	Correct!
C	An absolute value is a distance, so it cannot be negative.
D	The negative square root of a number and the square root of the negative number are not equal.

PTS: 1 DIF: Average
OBJ: 1-4.1 Extend the Concept of Absolute Values to All Irrational Numbers
NAT: 7.EE.3 TOP: 1-4 Introducing the Real Number System
KEY: irrational number | absolute value

25. ANS: C
The absolute value of an irrational number is its distance from 0 on a number line.

So, $\left|\sqrt{7}\right| = \sqrt{7} \approx 2.6$.

	Feedback
A	Remember if the digit to the right of the digit you are rounding to is less than 5, round down.
B	This answer is given to the nearest hundredth.
C	Correct!
D	An absolute value is a distance, so it cannot be negative.

PTS: 1 DIF: Average
OBJ: 1-4.1 Extend the Concept of Absolute Values to All Irrational Numbers
TOP: 1-4 Introducing the Real Number System KEY: irrational number | absolute value

26. ANS: B
Irrational numbers have decimal values that do not terminate or repeat. So, 2.333333333... is a rational number because it repeats.

	Feedback
A	This decimal does not terminate or repeat.
B	Correct!
C	This decimal does not terminate or repeat.
D	This decimal does not terminate or repeat.

PTS: 1 DIF: Average OBJ: 1-4.2 Decimal Forms of Irrational Numbers
NAT: 7.NS.2.c TOP: 1-4 Introducing the Real Number System
KEY: irrational number | decimal

27. ANS: A
Irrational numbers have decimal values that do not terminate or repeat. So, 4.358898944... is an irrational number because it does not terminate or repeat.

	Feedback
A	Correct!
B	This decimal repeats.
C	This decimal terminates
D	This decimal repeats.

PTS: 1 DIF: Average OBJ: 1-4.2 Decimal Forms of Irrational Numbers
NAT: 7.NS.2.c TOP: 1-4 Introducing the Real Number System
KEY: irrational number | decimal

28. ANS: D
Irrational numbers have decimal values that do not terminate or repeat.

	Feedback
A	Irrational numbers have decimal values that do not terminate.
B	Irrational numbers have decimal values that do not repeat.
C	Decimals that terminate or repeat are rational numbers.
D	Correct!

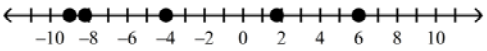
PTS: 1 DIF: Average OBJ: 1-4.2 Decimal Forms of Irrational Numbers
NAT: 7.NS.2.c TOP: 1-4 Introducing the Real Number System
KEY: irrational number | decimal

29. ANS: C
The set of real numbers consists of rational numbers and irrational numbers.
Any number that can be written as a fraction is a rational number. Irrational numbers can only be written as decimals that do not terminate or repeat.
If a rational number simplifies to a whole number or its opposite, it is also an integer.
If a rational number simplifies to a nonzero whole number, it is also a natural number.

	Feedback
A	To check whether the number is a terminating or repeating decimal, divide the numerator by the denominator.
B	There are more ways to classify the number. Check to see whether it is a terminating or repeating decimal.
C	Correct!
D	Since this number can be written as a fraction, it is not an irrational number.

PTS: 1 DIF: Average
OBJ: 1-4.3 Introduce the Real Number System and the Real Number Line
TOP: 1-4 Introducing the Real Number System
KEY: real number | classify | rational | irrational

30. ANS: A
Graph the numbers on a number line. Then, read them from left to right.



The numbers in order from least to greatest are –9, –8.2, –4, $1\frac{3}{4}$, and 6.

	Feedback
A	Correct!
B	Be sure to graph all of the numbers on the number line.
C	Order the numbers from least to greatest, not greatest to least.
D	Graph the numbers on a number line. Then, read them from left to right.

PTS: 1 DIF: Average OBJ: 1-4.4 Order Real Numbers on the Real Number Line
TOP: 1-4 Introducing the Real Number System KEY: compare | decimal | fraction | order

31. ANS: A
The number of significant digits in a measurement tells you how precise the measurement is.

	Feedback
A	Correct!
B	Some zero digits in a measurement are significant.
C	The digits that you estimate in a measurement are significant.
D	The digits you are sure of in a measurement are significant.

PTS: 1 DIF: Average OBJ: 1-5.1 Introduce Significant Digits
TOP: 1-5 Introducing Significant Digits KEY: significant digits

32. ANS: B
The number of significant digits in a measurement tells you how precise the measurement is. The greater the number of significant digits given for the same measurement, the more precise the measure.

Since Monique gave her measurement to the greatest number of significant digits, hers is the most precise measurement.

	Feedback
A	The greater the number of significant digits given for the same measurement, the more precise the measure.
B	Correct!
C	The greater the number of significant digits given for the same measurement, the more precise the measure.
D	The greater the number of significant digits given for the same measurement, the more precise the measure.

PTS: 1 DIF: Average OBJ: 1-5.1 Introduce Significant Digits
TOP: 1-5 Introducing Significant Digits KEY: significant digits

33. ANS: A
Zeros to the left of the first nonzero digit are not significant. Zeros in between nonzero digits are significant.

Since the first two zeros are to the left of the first nonzero digit, 1, in the number 0.01205, they are not significant. The rest of the digits, 1, 2, 0, and 5, are significant digits.

	Feedback
A	Correct!
B	Zeros to the left of the first nonzero digit are not significant.
C	Zeros in between nonzero digits are significant.
D	Zeros to the left of the first nonzero digit are not significant.

PTS: 1 DIF: Average
OBJ: 1-5.2 Apply Rules to Identify Significant Digits in a Given Number
TOP: 1-5 Introducing Significant Digits KEY: significant digits

34. ANS: D
Zeros to the left of the first nonzero digit are not significant. Zeros in between nonzero digits are significant. Trailing zeros in a decimal are significant.

Since the number 0.320 has one zero to the left of the first nonzero digit, it only has 3 significant digits.

	Feedback
A	Trailing zeros in a decimal are significant.
B	Zeros in between nonzero digits are significant.
C	Trailing zeros in a decimal are significant.
D	Correct!

PTS: 1 DIF: Average
OBJ: 1-5.2 Apply Rules to Identify Significant Digits in a Given Number
TOP: 1-5 Introducing Significant Digits KEY: significant digits

35. ANS: D
The third significant digit in 119,345 is 9. Since 9 is greater than 5, 119,345 is closer to 120,000 than it is to 110,000.

So, 119,345 rounded to 2 significant digits is 120,000.

	Feedback
A	If the digit to the right of the place you are rounding to is greater than 5, round up.
B	This number has more than 2 significant digits.
C	This number has more than 2 significant digits.
D	Correct!

PTS: 1 DIF: Average
OBJ: 1-5.3 Round Integers and Decimals to a Given Number of Significant Digits
TOP: 1-5 Introducing Significant Digits KEY: significant digits

36. ANS: C
Remember the first three zeros in 0.0012572 are not significant because they are to the left of the first nonzero digit. So, only 1, 2, 5, 7, and 2 are significant digits.

The fifth significant digit in 0.0012572 is 2. Since 2 is less than 5, 0.0012572 is closer to 0.001257 than it is to 0.001258.

So, 0.0012572 rounded to 4 significant digits is 0.001257.

	Feedback
A	This number has only 1 significant digit.
B	If the digit to the right of the place you are rounding to is less than 5, round down.
C	Correct!
D	This number has only 2 significant digits.

PTS: 1 DIF: Average
OBJ: 1-5.3 Round Integers and Decimals to a Given Number of Significant Digits
TOP: 1-5 Introducing Significant Digits KEY: significant digits

37. ANS: C
Start at 0. Move right 3 units. Then move right 3 units.
3 + 3 = 6

	Feedback
A	Move right on the number line to add a positive integer.
B	Use the number line to help you.
C	Correct!
D	Use the number line to help you.

PTS: 1 DIF: Average OBJ: 2-1.1 Add Integers with the Same Signs
NAT: 7.NS.1 TOP: 2-1 Adding Integers KEY: integer | addition

38. ANS: C
Start at 0. Move left 3 units. Then move left 2 units.
–3 + (–2) = –5

	Feedback
A	Move left on the number line to add a negative integer.
B	Use the number line to help you.
C	Correct!
D	Use the number line to help you.

PTS: 1 DIF: Average OBJ: 2-1.1 Add Integers with the Same Signs
NAT: 7.NS.1 TOP: 2-1 Adding Integers KEY: integer | addition

39. ANS: B
To add two integers with the same sign, find the sum of their absolute values and use the sign of the two integers.

	Feedback
A	To add integers with the same sign, find the sum of their absolute values.
B	Correct!
C	To add integers with the same sign, find the sum of their absolute values.
D	Check the signs.

PTS: 1 DIF: Average OBJ: 2-1.1 Add Integers with the Same Signs
TOP: 2-1 Adding Integers KEY: integer | addition

40. ANS: C
The sum of an integer and its opposite is equal to 0.

	Feedback
A	The two addends are additive inverses.
B	Use a number line to help you.
C	Correct!
D	Find the sum of the integer and its opposite.

PTS: 1 DIF: Average OBJ: 2-1.2 Add Integers to Their Opposites
NAT: 7.NS.1.a TOP: 2-1 Adding Integers
KEY: addition | integer | opposites | additive inverse

41. ANS: D
The sum of an integer and its opposite is equal to 0.

	Feedback
A	Use a number line to help you.
B	Find the sum of the integer and its opposite.
C	The two addends are additive inverses.
D	Correct!

PTS: 1 DIF: Average OBJ: 2-1.2 Add Integers to Their Opposites
NAT: 7.NS.1.a TOP: 2-1 Adding Integers
KEY: addition | integer | opposites | additive inverse

42. ANS: D
The sum of an integer and its opposite is equal to 0.

	Feedback
A	Use the number line to help you.
B	Use the number line to help you.
C	Find the sum of the integer and its opposite.
D	Correct!

PTS: 1 DIF: Average OBJ: 2-1.2 Add Integers to Their Opposites
NAT: 7.NS.1 | 7.NS.1.a TOP: 2-1 Adding Integers
KEY: addition | integer | opposites | additive inverse

43. ANS: B
Use negative numbers for the expenses. Find the difference of the absolute values. The answer is positive.

The club made a profit of $200.

	Feedback
A	Use negative numbers for the expenses.
B	Correct!
C	Use negative numbers for the expenses.
D	Use negative numbers for the expenses. Find the difference of the absolute values.

PTS: 1 DIF: Average OBJ: 2-1.3 Add Integers with Different Signs
TOP: 2-1 Adding Integers KEY: addition | integer

44. ANS: C
To subtract an integer, add its opposite.

	Feedback
A	To subtract an integer, add its opposite.
B	Add the opposite of the second number.
C	Correct!
D	To subtract an integer, add its opposite.

PTS: 1 DIF: Average OBJ: 2-2.1 Subtract Integers by Adding Their Opposites
TOP: 2-2 Subtracting Integers KEY: integer | subtraction

45. ANS: B
Count the units between 5 and –3.

	Feedback
A	Use the number line to help you.
B	Correct!
C	Count the units between 5 and –3.
D	Remember that distance is always positive.

PTS: 1 DIF: Average
OBJ: 2-2.2 Find the Distance Between Two Integers on a Number Line
NAT: 7.NS.1.c TOP: 2-2 Subtracting Integers KEY: distance | integer | number line

46. ANS: B
Find the absolute value of the difference of 9 and –6.
$| 9 – (–6) | = 15$

	Feedback
A	Find the absolute value of the difference of the numbers.
B	Correct!
C	Remember that distance is always positive.
D	Use a number line to help you.

PTS: 1 DIF: Average
OBJ: 2-2.2 Find the Distance Between Two Integers on a Number Line
NAT: 7.NS.1.c TOP: 2-2 Subtracting Integers KEY: distance | integer | absolute value

47. ANS: A
You can think of multiplication as repeated addition.
Add –3 five times.

	Feedback
A	Correct!
B	Use a number line to help you.
C	Think of multiplication as repeated addition.
D	Think of multiplication as repeated addition.

PTS: 1 DIF: Average OBJ: 2-3.1 Multiply Integers
TOP: 2-3 Multiplying and Dividing Integers KEY: integer | multiplication

48. ANS: D
In multiplying integers, if the signs are the same, the product will be positive. If the signs are different, the product will be negative.

	Feedback
A	Multiply the integers, not add.
B	Multiply the integers, not add.
C	If the signs are the same, the product will be positive. If the signs are different, the product will be negative.
D	Correct!

PTS: 1 DIF: Average OBJ: 2-3.1 Multiply Integers
TOP: 2-3 Multiplying and Dividing Integers KEY: integer | multiplication

49. ANS: C
Multiply the rate per minute by the number of minutes.
$-15 \bullet 52 = -780$

	Feedback
A	Multiply the rate per minute by the number of minutes.
B	When multiplying integers, if the signs are different, your answer will be negative.
C	Correct!
D	Multiply the rate per minute by the number of minutes.

PTS: 1 DIF: Average OBJ: 2-3.1 Multiply Integers
TOP: 2-3 Multiplying and Dividing Integers KEY: integer | multiplication

50. ANS: A
In dividing integers, if the signs are the same, the quotient will be positive. If the signs are different, the quotient will be negative.

	Feedback
A	Correct!
B	Divide the integers, not subtract.
C	Divide the integers, not add.
D	If the signs are the same, the quotient will be positive. If the signs are different, the quotient will be negative.

PTS: 1 DIF: Average OBJ: 2-3.2 Divide Integers
TOP: 2-3 Multiplying and Dividing Integers KEY: integer | division

51. ANS: C
In dividing integers, if the signs are the same, the quotient will be positive. If the signs are different, the quotient will be negative.

	Feedback
A	Divide the integers, not add.
B	Divide the integers, not subtract.
C	Correct!
D	If the signs are the same, the quotient will be positive. If the signs are different, the quotient will be negative.

PTS: 1 DIF: Average OBJ: 2-3.2 Divide Integers
TOP: 2-3 Multiplying and Dividing Integers KEY: integer | division

52. ANS: B
Miguel spends $35 a day. You can write this as −35. Multiply first, and then add.
$-35 \bullet 4 + 21 \bullet 5 = -140 + 105 = -35$

	Feedback
A	Write the amount Miguel spends as a negative number and add it to the amount he earns. If the sum is a negative number, it means that he has less money, otherwise he has more.
B	Correct!
C	Write the amount Miguel spends as a negative number and add it to the amount he earns. If the sum is a negative number, it means that he has less money, otherwise he has more.
D	You switched the number of days Miguel spends money with the number of days he earns money when you multiplied.

PTS: 1 DIF: Difficult
OBJ: 2-4.1 Use Addition, Subtraction, Multiplication, and Division with Integers
NAT: 7.NS.3 TOP: 2-4 Operations with Integers KEY: order of operations | integer

53. ANS: C
Use the order of operations.
1. Perform operations within grouping symbols.
2. Evaluate powers.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

	Feedback
A	Multiply and divide before adding and subtracting.
B	Multiply and divide from left to right. Then, add and subtract from left to right.
C	Correct!
D	Multiply and divide before adding and subtracting.

PTS: 1 DIF: Average
OBJ: 2-4.1 Use Addition, Subtraction, Multiplication, and Division with Integers
TOP: 2-4 Operations with Integers KEY: order of operations | integer

54. ANS: A

$\frac{2}{7} + \frac{1}{8}$

$= \frac{16}{56} + \frac{7}{56}$ Multiply the denominators. Write equivalent fractions using a common denominator.

$= \frac{23}{56}$ Add. If necessary, simplify.

	Feedback
A	Correct!
B	Check the signs.
C	The fractions have different denominators, so multiply the denominators to find a common denominator.
D	Perform the correct operation.

PTS: 1 DIF: Average OBJ: 2-5.1 Add Rational Numbers
NAT: 7.NS.1.d TOP: 2-5 Operations with Rational Numbers
KEY: addition | fraction | rational number

55. ANS: A
First find a common denominator, and then add. If necessary, simplify.

The wall is $\frac{19}{35}$ covered by bookcases.

	Feedback
A	Correct!
B	First find a common denominator, and then add.
C	Perform the correct operation.
D	The fractions have different denominators, so multiply the denominators to find a common denominator.

PTS: 1 DIF: Average OBJ: 2-5.1 Add Rational Numbers
NAT: 7.NS.1.d TOP: 2-5 Operations with Rational Numbers
KEY: addition | fraction | rational number

56. ANS: B
Subtract the numerators and keep the common denominator.

	Feedback
A	Perform the correct operation.
B	Correct!
C	The fractions have like denominators, so keep the common denominator.
D	Check the signs.

PTS: 1 DIF: Average OBJ: 2-5.2 Subtract Rational Numbers
NAT: 7.NS.1.d TOP: 2-5 Operations with Rational Numbers
KEY: subtraction | fraction | rational number

57. ANS: A

$\frac{5}{9} - \frac{3}{7}$

$= \frac{35}{63} - \frac{27}{63}$ Multiply the denominators. Write equivalent fractions using a common denominator.

$= \frac{8}{63}$ Subtract. If necessary, simplify.

	Feedback
A	Correct!
B	Check the signs.
C	Perform the correct operation.
D	The fractions have different denominators, so multiply the denominators to find a common denominator.

PTS: 1 DIF: Average OBJ: 2-5.2 Subtract Rational Numbers
NAT: 7.NS.1.d TOP: 2-5 Operations with Rational Numbers
KEY: subtraction | fraction | rational number

58. ANS: D

$\frac{4}{8} - \frac{2}{5}$

$= \frac{20}{40} - \frac{16}{40}$ Multiply the denominators. Write equivalent fractions using a common denominator.

$= \frac{1}{10}$ Subtract. If necessary, simplify.

The first carpenter is $\frac{1}{10}$ of the way ahead of the second carpenter.

	Feedback
A	Check your calculations.
B	Use subtraction.
C	The fractions have different denominators, so multiply the denominators to find a common denominator.
D	Correct!

PTS: 1 DIF: Average OBJ: 2-5.2 Subtract Rational Numbers
NAT: 7.NS.1.d TOP: 2-5 Operations with Rational Numbers
KEY: subtraction | fraction | rational number

59. ANS: A

Multiply the numerators and multiply the denominators. If necessary, simplify.

$-\frac{7}{9} \bullet \frac{1}{2} = -\frac{7}{18}$

	Feedback
A	Correct!
B	Perform the correct operation.
C	Multiply the numerators and multiply the denominators.
D	Multiply the numerators and multiply the denominators.

PTS: 1 DIF: Average OBJ: 2-5.3 Multiply Rational Numbers
NAT: 7.NS.2.a | 7.NS.2.c TOP: 2-5 Operations with Rational Numbers
KEY: fraction | multiplication | rational number

60. ANS: A

Multiply $\frac{3}{10}$ by the reciprocal of $\frac{13}{14}$. If necessary, simplify.

$\frac{3}{10} \div \frac{13}{14} = \frac{3}{10} \bullet \frac{14}{13} = \frac{21}{65}$

	Feedback
A	Correct!
B	Multiply the first fraction by the reciprocal of the second fraction.
C	Multiply the first fraction by the reciprocal of the second fraction.
D	Perform the correct operation.

PTS: 1 DIF: Average OBJ: 2-5.4 Divide Rational Numbers
NAT: 7.NS.2.c TOP: 2-5 Operations with Rational Numbers
KEY: division | fraction | rational number

61. ANS: D

Write any mixed numbers as improper fractions. Then, multiply by the reciprocal. If necessary, simplify.

$1\frac{7}{8} \div \frac{3}{8} = \frac{15}{8} \bullet \frac{8}{3} = 55$

You can cut 5 pieces of wood.

	Feedback
A	Perform the correct operation.
B	Divide the length of the board by the length of the piece of wood.
C	Dividing by a fraction is equivalent to multiplying by its reciprocal.
D	Correct!

PTS: 1 DIF: Average OBJ: 2-5.4 Divide Rational Numbers
NAT: 7.NS.2.c TOP: 2-5 Operations with Rational Numbers
KEY: division | fraction | rational number | mixed number

62. ANS: B

3.350

4.894

5.600

+ 4.950

18.794

Align the decimal points. Use zeros as placeholders. Add the numbers. Then place the decimal point.

	Feedback
A	Place the decimal point in the correct place.
B	Correct!
C	Place the decimal point in the correct place.
D	First, align the decimal points and use zeros as placeholders. Then, add the numbers and place the decimal point.

PTS: 1 DIF: Average OBJ: 2-6.1 Add and Subtract Decimals
NAT: 7.NS.1.d TOP: 2-6 Operations with Decimals KEY: decimal | addition

63. ANS: A

70% = 0.70 Write the percent as a decimal.
0.70 • 90 = 63 Multiply using the decimal.

	Feedback
A	Correct!
B	To find the percent of a number, multiply.
C	Place the decimal point in the correct location.
D	First, write the percent as a decimal. Then, multiply the result by the number.

PTS: 1 DIF: Average OBJ: 2-6.2 Multiply Numbers in Decimal or Percent Form
NAT: 7.NS.2.c TOP: 2-6 Operations with Decimals KEY: percent | multiplication

64. ANS: A

Multiply the numbers. The product should have the same number of decimal places as the sum of the decimal places in the factors.

	Feedback
A	Correct!
B	Place the decimal point in the correct location.
C	First, multiply the numbers. Then, place the decimal point in the correct location.
D	First, multiply the numbers. Then, place the decimal point in the correct location.

PTS: 1 DIF: Average OBJ: 2-6.2 Multiply Numbers in Decimal or Percent Form
NAT: 7.NS.2.c TOP: 2-6 Operations with Decimals KEY: decimal | multiplication

65. ANS: D
Multiply the average yearly rainfall by the number of years. The product should have the same number of decimal places as the sum of the decimal places in the factors.

The total amount of rainfall in Lakeview in 5.75 years is 123.9125 inches.

	Feedback
A	The product should have the same number of decimal places as the sum of the decimal places in the factors.
B	Multiply the average yearly rainfall by the number of years.
C	First, multiply the numbers. Then, place the decimal point in the correct location.
D	Correct!

PTS: 1 DIF: Average OBJ: 2-6.2 Multiply Numbers in Decimal or Percent Form
NAT: 7.NS.2.c TOP: 2-6 Operations with Decimals KEY: decimal | multiplication

66. ANS: B
Multiply both numbers by the least power of 10 that will make the divisor an integer. Divide as with whole numbers. Place the decimal point in the quotient directly above the decimal point in the dividend.

	Feedback
A	Place the decimal point in the correct location.
B	Correct!
C	Multiply both numbers by the least power of ten that will make the divisor an integer. Then, divide as with whole numbers.
D	Check the signs.

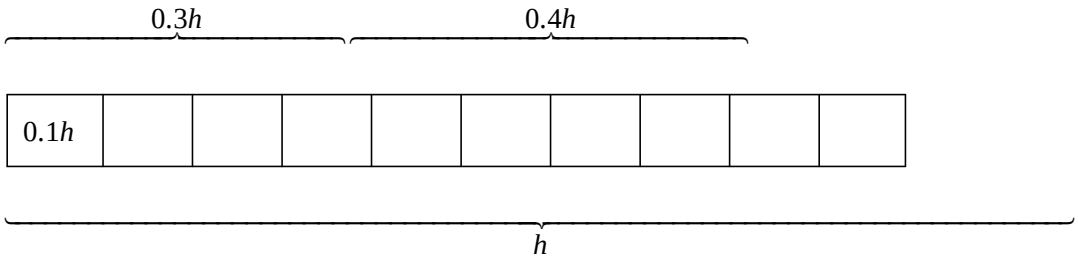
PTS: 1 DIF: Average OBJ: 2-6.3 Divide Numbers in Decimals or Percent Form
NAT: 7.NS.2.c TOP: 2-6 Operations with Decimals KEY: decimal | division

67. ANS: B
Set up an equation and solve.
sale • percent = commission

	Feedback
A	Check that the answer reasonable.
B	Correct!
C	Set up an equation and solve.
D	Set up an equation and solve.

PTS: 1 DIF: Average OBJ: 2-6.3 Divide Numbers in Decimals or Percent Form
NAT: 7.NS.2.c TOP: 2-6 Operations with Decimals KEY: division | percent

68. ANS: C
To simplify $0.3h + 0.4h$, you can add the coefficients of each term.



From the bar model, you can see that $0.3h + 0.4h = 0.7h$.

	Feedback
A	This is one of the algebraic terms in the expression. You want to find the sum of the expression.
B	This is one of the algebraic terms in the expression. You want to find the sum of the expression.
C	Correct!
D	It may help you to use a bar model to simplify the expression.

PTS: 1 DIF: Average
OBJ: 3-1.2 Simplify Algebraic Expressions with Decimal Coefficients by Adding
NAT: 7.EE.1 | 7.EE.2 TOP: 3-1 Adding Algebraic Terms
KEY: bar models | decimal | addition | algebraic expressions

69. ANS: A
To simplify $s + \frac{3}{5}s$, you can add the coefficients of each term. First, start by rewriting the coefficient of s, which is 1, with a denominator of 5. Then, simplify by adding the coefficients.

$$s + \frac{3}{5}s = \frac{5}{5}s + \frac{3}{5}s$$
$$= \frac{8}{5}s$$

So, the simplified expression is $\frac{8}{5}s$.

	Feedback
A	Correct!
B	Before you add, you need to rewrite the coefficient of the first term as a fraction with a denominator of 5.
C	When you add fractions with like denominators, the sum has the same denominator as the addends.
D	Before you add, you need to rewrite the coefficient of the first term as a fraction with a denominator of 5.

PTS: 1 DIF: Average
OBJ: 3-1.3 Simplify Algebraic Expressions with Fractional Coefficients by Adding
NAT: 7.EE.1 | 7.EE.2 TOP: 3-1 Adding Algebraic Terms
KEY: fraction | addition | algebraic expressions

70. ANS: D

To simplify $\frac{2}{3}b + \frac{3}{4}b$, find the LCD of the coefficients of each term. The LCD of 3 and 4 is 12. Then, rewrite each term and simplify.

$$\frac{2}{3}b + \frac{3}{4}b = \frac{8}{12}b + \frac{9}{12}b$$

$$= \frac{17}{12}b$$

So, the simplified expression is $\frac{17}{12}b$.

	Feedback
A	You do not find the sum of fractions with unlike denominators by simply adding the numerators and denominators. You need to find a common denominator.
B	When you rewrite fractions using a common denominator you must change both the numerator and denominator.
C	When you add fractions with like denominators, the sum has the same denominator as the addends.
D	Correct!

PTS: 1 DIF: Average
OBJ: 3-1.3 Simplify Algebraic Expressions with Fractional Coefficients by Adding
NAT: 7.EE.1 | 7.EE.2 TOP: 3-1 Adding Algebraic Terms
KEY: fraction | addition | algebraic expressions

71. ANS: A

In order to simplify the expression, you can subtract $0.6w$ from $1.8w$ by finding the difference of their coefficients.

$1.8w - 0.6w = 1.2w$

The simplified expression is $1.2w$.

	Feedback
A	Correct!
B	In order to subtract one term from another, find the difference of their coefficients.
C	You need to find the difference of the terms, not the sum.
D	In order to subtract one term from another, find the difference of their coefficients.

PTS: 1 DIF: Average
OBJ: 3-2.1 Simplify Algebraic Expressions with Decimal Coefficients by Subtracting
NAT: 7.EE.1 | 7.EE.2 TOP: 3-2 Subtracting Algebraic Terms
KEY: decimal | subtraction | algebraic expressions

72. ANS: B

In order to simplify the expression, you can subtract $0.1n$ from n by finding the difference of their coefficients. Remember, the coefficient of n is 1.

$n - 0.1n = 0.9n$

The simplified expression is $0.9n$.

	Feedback
A	The coefficient of n is 1.
B	Correct!
C	You need to find the difference of the terms, not the sum.
D	In order to subtract one term from another, find the difference of their coefficients.

PTS: 1 DIF: Average
OBJ: 3-2.1 Simplify Algebraic Expressions with Decimal Coefficients by Subtracting
NAT: 7.EE.1 | 7.EE.2 TOP: 3-2 Subtracting Algebraic Terms
KEY: decimal | subtraction | algebraic expressions

73. ANS: D

To simplify $\frac{7}{12}a - \frac{1}{3}a$, find the LCD of the coefficients of each term. The LCD of 12 and 3 is 12. Then, rewrite each term and simplify. Be sure to write your answer in simplest form.

$$\frac{7}{12}a - \frac{1}{3}a = \frac{7}{12}a - \frac{4}{12}a$$

$$= \frac{3}{12}a$$

$$= \frac{1}{4}a$$

So, the simplified expression is $\frac{1}{4}a$.

	Feedback
A	You do not find the difference of fractions with unlike denominators by simply subtracting the numerators and denominators. You need to find a common denominator.
B	When you rewrite fractions using a common denominator you must change both the numerator and denominator.
C	You want to find the difference, not the sum.
D	Correct!

PTS: 1 DIF: Average
OBJ: 3-2.2 Simplify Algebraic Expressions with Fractional Coefficients by Subtracting
NAT: 7.EE.1 | 7.EE.2 TOP: 3-2 Subtracting Algebraic Terms
KEY: fraction | subtraction | algebraic expressions

74. ANS: C

To simplify $\frac{1}{2}k - \frac{3}{7}k$, find the LCD of the coefficients of each term. The LCD of 2 and 7 is 14. Then, rewrite each term and simplify. Be sure to write your answer in simplest form.

$\frac{1}{2}k - \frac{3}{7}k = \frac{7}{14}k - \frac{6}{14}k$

$= \frac{1}{14}k$

So, the simplified expression is $\frac{1}{14}k$.

	Feedback
A	You do not find the difference of fractions with unlike denominators by simply subtracting the numerators and denominators. You need to find a common denominator.
B	When you rewrite fractions using a common denominator you must change both the numerator and denominator.
C	Correct!
D	You want to find the difference, not the sum.

PTS: 1 DIF: Average
OBJ: 3-2.2 Simplify Algebraic Expressions with Fractional Coefficients by Subtracting
NAT: 7.EE.1 | 7.EE.2 TOP: 3-2 Subtracting Algebraic Terms
KEY: fraction | subtraction | algebraic expressions

75. ANS: A

To simplify $3.6r + 2.2r - 4$, you can add the like terms. The like terms are $3.6r$ and $2.2r$. To add them, simply add their coefficients.

$3.6r + 2.2r - 4 = 5.8r - 4$

The simplified expression is $5.8r - 4$.

	Feedback
A	Correct!
B	A term that has a variable and a constant term are not like terms, so they cannot be combined.
C	To add like terms, add their coefficients.
D	A term that has a variable and a constant term are not like terms, so they cannot be combined.

PTS: 1 DIF: Average
OBJ: 3-3.1 Simplify Algebraic Expressions with More Than Two Terms and Involving Decimal Coefficients NAT: 7.EE.1 | 7.EE.2
TOP: 3-3 Simplifying Algebraic Expressions
KEY: decimal | simplifying | algebraic expressions | like terms

76. ANS: B
To simplify $1.3g - 0.7g + 2$, you can subtract the like terms. The like terms are $1.3g$ and $0.7g$. To subtract them, simply subtract their coefficients.

$1.3g - 0.7g + 2 = 0.6g + 2$

The simplified expression is $0.6g + 2$.

	Feedback
A	To subtract like terms, subtract their coefficients.
B	Correct!
C	A term that has no like terms in a an expression must still be included in the simplified expression.
D	A term that has a variable and a constant term are not like terms, so they cannot be combined.

PTS: 1 DIF: Average
OBJ: 3-3.1 Simplify Algebraic Expressions with More Than Two Terms and Involving Decimal Coefficients NAT: 7.EE.1 | 7.EE.2
TOP: 3-3 Simplifying Algebraic Expressions
KEY: decimal | simplifying | algebraic expressions | like terms

77. ANS: B
First, rewrite the fractional coefficients with a common denominator. Then, combine like terms. Here, the least common denominator of $\frac{1}{3}$ and $\frac{5}{9}$ is 9.

$$\frac{1}{3}x + \frac{5}{9}x - 1 + 4 = \frac{3}{9}x + \frac{5}{9}x - 1 + 4$$
$$= \frac{8}{9}x + 3$$

	Feedback
A	To add like terms with fractional coefficients, you cannot simply add the numerators and denominators of the fractions. You must write each fraction using a common denominator.
B	Correct!
C	Be sure to pay attention to the operations in the expression. You must add and subtract in this expression.
D	You must multiply both the numerator and denominator of a fraction when rewriting the fraction with a common denominator.

PTS: 1 DIF: Average
OBJ: 3-3.2 Simplify Algebraic Expressions with More Than Two Terms and Involving Fractional Coefficients NAT: 7.EE.1 | 7.EE.2
TOP: 3-3 Simplifying Algebraic Expressions
KEY: fraction | simplifying | algebraic expressions | like terms

78. ANS: D

First, rewrite the fractional coefficients with a common denominator. Then, combine like terms. Here, the least common denominator of $\frac{1}{2}$ and $\frac{3}{8}$ is 8.

$$\frac{1}{2}x + \frac{3}{8}x - 3 - 2 = \frac{4}{8}x + \frac{3}{8}x - 3 - 2$$
$$= \frac{7}{8}x - 5$$

	Feedback
A	To add like terms with fractional coefficients, you cannot simply add the numerators and denominators of the fractions. You must write each fraction using a common denominator.
B	Remember, a negative number minus a positive number is the same as a negative number plus a negative number.
C	This expression can be further simplified.
D	Correct!

PTS: 1 DIF: Average
OBJ: 3-3.2 Simplify Algebraic Expressions with More Than Two Terms and Involving Fractional Coefficients NAT: 7.EE.1 | 7.EE.2
TOP: 3-3 Simplifying Algebraic Expressions
KEY: fraction | simplifying | algebraic expressions | like terms

79. ANS: C

First, rewrite the fractional coefficients with a common denominator. Then, combine like terms. Last, write the fractional coefficient in simplest form. Here, the least common denominator of $\frac{1}{8}$, $\frac{1}{4}$, and $\frac{3}{8}$ is 8.

$\frac{1}{8}t + \frac{1}{4}t + \frac{3}{8}t = \frac{1}{8}t + \frac{2}{8}t + \frac{3}{8}t$ Rewrite $\frac{1}{4}t$ as $\frac{2}{8}t$.

$= \frac{3}{8}t + \frac{3}{8}t$ Add the first two like terms.

$= \frac{6}{8}t$ Add the like terms.

$= \frac{3}{4}t$ Simplify.

	Feedback
A	To add like terms with fractional coefficients, you cannot simply add the numerators and denominators of the fractions. You must write each fraction using a common denominator.
B	Remember, you must multiply both the numerator and the denominator when you rewrite a fraction using a common denominator.
C	Correct!
D	This is the difference of the first two terms. You must add the remaining like terms.

PTS: 1 DIF: Average
OBJ: 3-3.3 Simplify Algebraic Expressions with Three Like Terms
NAT: 7.EE.1 | 7.EE.2 TOP: 3-3 Simplifying Algebraic Expressions
KEY: fraction | simplifying | algebraic expressions | like terms

80. ANS: A

In order to simplify the expression, subtract the first two like terms. Then, add the remaining like terms.

$2.5m - 1.3m + 0.8m = 1.2m + 0.8m$

$= 2m$

	Feedback
A	Correct!
B	You must subtract the first two terms, then add the last term.
C	Be sure to pay attention to the operations in the expression. You must add and subtract in this expression.
D	This is the sum of the first two terms. You must add all of the like terms.

PTS: 1 DIF: Average
OBJ: 3-3.3 Simplify Algebraic Expressions with Three Like Terms
NAT: 7.EE.1 | 7.EE.2 TOP: 3-3 Simplifying Algebraic Expressions
KEY: simplifying | algebraic expressions | like terms | decimal

81. ANS: C

$9x^3 + 49x^3 - 63b^4$

$= (9x^3 + 49x^3) - 63b^4$ Combine like terms.

$= 58x^3 - 63b^4$ Simplify.

	Feedback
A	Combine like terms and then simplify.
B	When adding like terms, the exponents remain the same.
C	Correct!
D	You may only add or subtract like terms. x and b are not like terms.

PTS: 1 DIF: Difficult
OBJ: 3-3.4 Simplify Algebraic Expressions by Grouping Like Terms
NAT: 7.EE.1 TOP: 3-3 Simplifying Algebraic Expressions
KEY: combine | like terms

82. ANS: A

$2a + x + 2a + y$ Write an expression using the side lengths.

$= (2a + 2a) + x + y$ Identify and group like terms.

$= 4a + x + y$ Add the coefficients.

	Feedback
A	Correct!
B	Add the side lengths together. You can only combine like terms.
C	When adding like terms, exponents remain the same.
D	Add the side lengths together. You can only combine like terms.

PTS: 1 DIF: Difficult
OBJ: 3-3.4 Simplify Algebraic Expressions by Grouping Like Terms
NAT: 7.EE.1 TOP: 3-3 Simplifying Algebraic Expressions
KEY: combine | like terms

83. ANS: C

In order to simplify the expression, first group the like terms. Then, combine the like terms.

$6s + 9c - 2s = 6s - 2s + 9c$

$= 4s + 9c$

	Feedback
A	Be sure to keep the operations in the expression the same when you regroup.
B	Make sure you regroup the like terms correctly before you combine them.
C	Correct!
D	You cannot combine terms that are not like terms.

PTS: 1 DIF: Average OBJ: 3-3.5 Simplify Algebraic Expressions with Two Variables
NAT: 7.EE.1 | 7.EE.2 TOP: 3-3 Simplifying Algebraic Expressions
KEY: simplifying | algebraic expressions | like terms | two variables

84. ANS: C
In order to simplify the expression, first group the like terms. Then, combine the like terms.

$$6y - x - 2y + 9x = \left(6y - 2y\right) + \left(-x + 9x\right)$$
$$= 4y + 8x$$

	Feedback
A	Be sure to keep the operations in the expression the same when you regroup.
B	Make sure you regroup the like terms correctly before you combine them.
C	Correct!
D	You cannot combine terms that are not like terms.

PTS: 1 DIF: Average OBJ: 3-3.5 Simplify Algebraic Expressions with Two Variables
NAT: 7.EE.1 | 7.EE.2 TOP: 3-3 Simplifying Algebraic Expressions
KEY: simplifying | algebraic expressions | like terms | two variables

85. ANS: D
In order to simplify the expression, first group the like terms. Then, write each pair of like terms with a common denominator. Then, combine the like terms and simplify.

$$\frac{2}{3}x - \frac{1}{6}x + \frac{2}{5}z + \frac{6}{15}z = \left(\frac{2}{3}x - \frac{1}{6}x\right) + \left(\frac{2}{5}z + \frac{6}{15}z\right)$$
$$= \left(\frac{4}{6}x - \frac{1}{6}x\right) + \left(\frac{6}{15}z + \frac{6}{15}z\right)$$
$$= \frac{3}{6}x + \frac{12}{15}z$$
$$= \frac{1}{2}x + \frac{4}{5}z$$

	Feedback
A	You cannot simply add or subtract the numerators and denominators of like terms with fractional coefficients. You must rewrite the fractions using a common denominator first.
B	Be sure to pay attention to the operations in the expression. You must add and subtract in this expression.
C	Remember, you must multiply both the numerator and the denominator when you rewrite a fraction using a common denominator.
D	Correct!

PTS: 1 DIF: Difficult OBJ: 3-3.5 Simplify Algebraic Expressions with Two Variables
NAT: 7.EE.1 | 7.EE.2 TOP: 3-3 Simplifying Algebraic Expressions
KEY: simplifying | algebraic expressions | like terms | two variables

86. ANS: A
In order to expand the expression, first use the Distributive Property. Then, multiply.

$$\frac{1}{5}(25x + 30) = \frac{1}{5}(25x) + \frac{1}{5}(30)$$
$$= 5x + 6$$

	Feedback
A	Correct!
B	You must distribute the fractional factor to both terms in the expression.
C	You are multiplying by a factor of one fifth, not five.
D	You must distribute the fractional factor to both terms in the expression.

PTS: 1 DIF: Average
OBJ: 3-4.1 Expand Algebraic Expressions with Fractional Factors
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | fraction | Distributive Property

87. ANS: D
In order to expand the expression, first rewrite subtraction as addition. Then, use the Distributive Property and multiply. Last, you can rewrite the expression using subtraction.

$$\frac{1}{7}(3x - 14) = \frac{1}{7}\left(3x + (-14)\right)$$
$$= \frac{1}{7}(3x) + \frac{1}{7}(-14)$$
$$= \frac{3}{7}x + (-2)$$
$$= \frac{3}{7}x - 2$$

	Feedback
A	This expression is not equivalent to the given expression. Expand the expression by using the Distributive Property.
B	You must distribute the fractional factor to both terms in the expression.
C	Expand the expression by using the Distributive Property. Be sure to use the correct signs.
D	Correct!

PTS: 1 DIF: Difficult
OBJ: 3-4.1 Expand Algebraic Expressions with Fractional Factors
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | fraction | Distributive Property

88. ANS: B
In order to expand the expression, first use the Distributive Property. Then, multiply.

$$0.6(3x + 4) = 0.6(3x) + 0.6(4)$$
$$= 1.8x + 2.4$$

	Feedback
A	To distribute 0.6 to each term, multiply each term by 0.6.
B	Correct!
C	You must distribute the decimal factor to both terms in the expression.
D	Be careful where you place the decimal point when you multiply with decimals.

PTS: 1 DIF: Average
OBJ: 3-4.2 Expand Algebraic Expressions with Decimal Factors
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | decimal | Distributive Property

89. ANS: C
In order to expand the expression, first rewrite subtraction as addition. Then, use the Distributive Property and multiply. Last, you can rewrite the expression using subtraction.

$$0.3(-0.5x - 0.7) = 0.3\big(-0.5x + (-0.7)\big)$$
$$= 0.3(-0.5x) + 0.3(-0.7)$$
$$= -0.15x + (-0.21)$$
$$= -0.15x - 0.21$$

	Feedback
A	Be careful where you place the decimal point when you multiply with decimals.
B	Be careful that you use the correct signs when you multiply positive and negative decimals.
C	Correct!
D	To distribute 0.3 to each term, multiply each term by 0.3.

PTS: 1 DIF: Difficult
OBJ: 3-4.2 Expand Algebraic Expressions with Decimal Factors
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | decimal | Distributive Property

90. ANS: D
In order to find the expression that is equivalent to $1.6x - 4.8$, expand each of the expressions in the answer choices.

$0.4(4x - 1.2) = 1.6x - 0.48$ Use the Distributive Property and multiply.
$0.2(8x + 24) = 1.6x + 4.8$ Use the Distributive Property and multiply.
$0.8(2x - 0.6) = 1.6x - 0.48$ Use the Distributive Property and multiply.
$0.8(2x - 6) = 1.6x - 4.8$ Use the Distributive Property and multiply.

So, the expression $0.8(2x - 6)$ is equivalent to $1.6x - 4.8$.

	Feedback
A	This expression is not equivalent to the given expression. Expand each expression by using the Distributive Property.
B	This expression is not equivalent to the given expression. Expand each expression by using the Distributive Property.
C	This expression is not equivalent to the given expression. Expand each expression by using the Distributive Property.
D	Correct!

PTS: 1 DIF: Difficult
OBJ: 3-4.2 Expand Algebraic Expressions with Decimal Factors
NAT: 7.EE.1 | 7.EE.2 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | decimal | Distributive Property

91. ANS: B
In order to expand the expression, first rewrite subtraction as addition. Then, use the Distributive Property and multiply.

$-7(2x - 4) = -7\big(2x + (-4)\big)$ Rewrite subtraction as addition.
$= -7(2x) + (-7)(-4)$ Use the Distributive Property.
$= -14x + 28$ Multiply.

	Feedback
A	Be sure to use the correct signs when expanding an expression with a negative factor.
B	Correct!
C	Be sure to use the correct signs when expanding an expression with a negative factor.
D	You must distribute the negative factor to both terms in the expression.

PTS: 1 DIF: Average
OBJ: 3-4.3 Expand Algebraic Expressions with Negative Factors
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | Distributive Property

92. ANS: C
In order to expand the expression, use the Distributive Property and multiply.

$-2(-0.1x + 0.4) = -2(-0.1x) + (-2)(0.4)$ Use the Distributive Property.

$= 0.2x + (-0.8)$ Multiply.

$= 0.2x - 0.8$ Rewrite the expression.

	Feedback
A	Be sure to use the correct signs when expanding an expression with a negative factor.
B	Be careful where you place the decimal point when you multiply with decimals.
C	Correct!
D	You must distribute the negative factor to both terms in the expression.

PTS: 1 DIF: Average
OBJ: 3-4.3 Expand Algebraic Expressions with Negative Factors
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: expand | algebraic expressions | Distributive Property

93. ANS: A
$2(5m + 4m)$
$= 10m + 8m$ Distributive Property
$= 18m$ Simplify.

	Feedback
A	Correct!
B	Combine the like terms and simplify your answer.
C	Check your calculations.
D	Use the Distributive Property correctly.

PTS: 1 DIF: Average OBJ: 3-4.4 Expand and Simplify Algebraic Expressions
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: like terms | simplify | combine | algebraic expressions

94. ANS: D
Use the Distributive Property. Then, multiply, group like terms, and simplify.

	Feedback
A	Check the signs.
B	After grouping like terms, add or subtract the coefficients only.
C	Use the Distributive Property and multiply correctly.
D	Correct!

PTS: 1 DIF: Average OBJ: 3-4.4 Expand and Simplify Algebraic Expressions
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: like terms | simplify | combine | algebraic expressions

95. ANS: C

$3x + 6(5x - 7b)$

$= 3x + 30x - 42b$ Distributive Property

$= (3x + 30x) - 42b$ Associative Property

$= 33x - 42b$ Combine like terms.

	Feedback
A	You may only add or subtract like terms. *x* and *b* are not like terms.
B	Check the signs.
C	Correct!
D	When using the Distributive Property, every term inside the parentheses is affected.

PTS: 1 DIF: Average OBJ: 3-4.4 Expand and Simplify Algebraic Expressions
NAT: 7.EE.1 TOP: 3-4 Expanding Algebraic Expressions
KEY: like terms | simplify | combine | algebraic expressions

96. ANS: A

In order to factor the expression, find the greatest common factor (GCF) of the terms and then factor the GCF from each term. The GCF of $12a$ and $21b$ is 3.

$12a + 21b = 3(4a) + (3)(7b)$ The GCF of $12a$ and $21b$ is 3.

$= 3(4a + 7b)$ Factor 3 from each term.

The factored expression is $3(4a + 7b)$.

	Feedback
A	Correct!
B	Be sure to factor the GCF from each term.
C	The GCF of the terms is not 12. Find the GCF and then factor it from each term.
D	This expression can be factored. First, find the GCF of the terms in the expression.

PTS: 1 DIF: Average OBJ: 3-5.1 Factor Algebraic Expressions with Two Variables
NAT: 7.EE.1 TOP: 3-5 Factoring Algebraic Expressions
KEY: factor | algebraic expressions | GCF

97. ANS: C

In order to factor the expression, first write subtraction as addition. Then, find the greatest common factor (GCF) of the terms and factor the GCF from each term. The GCF of $4x$ and $-24y$ is 4.

$4x - 24y = 4x + (-24y)$ Rewrite the expression.

$= 4(x) + (4)(-6y)$ The GCF of $4x$ and $-24y$ is 4.

$= 4(x - 6y)$ Factor 4 from each term.

The factored expression is $4(x - 6y)$.

	Feedback
A	Be sure to use the correct signs when factoring an expression involving subtraction.
B	This expression is not fully factored. Try finding the GCF of the terms in order to factor the expression.
C	Correct!
D	Be sure to factor the GCF from each term correctly.

PTS: 1 DIF: Average OBJ: 3-5.1 Factor Algebraic Expressions with Two Variables
NAT: 7.EE.1 TOP: 3-5 Factoring Algebraic Expressions
KEY: factor | algebraic expressions | GCF

98. ANS: C

In order to factor the expression, first write subtraction as addition. Then, find the greatest common factor (GCF) of the terms and factor the GCF from each term. The GCF of $-6y$ and -36 is -6.

$-6y - 36 = -6y + (-36)$ Rewrite the expression.

$= -6(y) + (-6)(6)$ The GCF of $-6y$ and -36 is -6.

$= -6(y + 6)$ Factor -6 from each term.

The factored expression is $-6(y + 6)$.

	Feedback
A	Be sure to use the correct signs when factoring an expression involving negative terms and subtraction.
B	This expression is not factored completely. Try finding the GCF of the terms in order to factor the expression.
C	Correct!
D	Be sure to factor the GCF from each term.

PTS: 1 DIF: Average OBJ: 3-5.2 Factor Algebraic Expressions with Negative Terms
NAT: 7.EE.1 TOP: 3-5 Factoring Algebraic Expressions
KEY: factor | algebraic expressions | GCF

99. ANS: A
You can factor an expression involving three terms just like you do an expression involving two terms. In order to factor the expression, first write subtraction as addition. Then, find the greatest common factor (GCF) of the terms and factor the GCF from each term. The GCF of $-2q$, $-8r$, and -6 is -2.

$$\begin{aligned} -2q - 8r - 6 &= -2q + (-8r) + (-6) \\ &= -2(q) + (-2)(4r) + (-2)(3) \\ &= -2(q + 4r + 3) \end{aligned}$$

The factored expression is $-2(q + 4r + 3)$.

	Feedback
A	Correct!
B	This expression is not factored completely. Try finding the GCF of the terms in order to factor the expression.
C	Be sure to use the correct signs when factoring an expression involving negative terms and subtraction.
D	This expression is not factored completely. Try finding the GCF of the terms in order to factor the expression.

PTS: 1 DIF: Difficult OBJ: 3-5.2 Factor Algebraic Expressions with Negative Terms
NAT: 7.EE.1 TOP: 3-5 Factoring Algebraic Expressions
KEY: factor | algebraic expressions | GCF

100. ANS: C
Look for keywords in the phrase.

Verbal Expressions	**Operation**
add 20 to a number 20 more than a number	+
the difference of a number and 20 20 less than a number	–
the product of 20 and a number 20 multiplied by a number	×
the quotient of a number and 20 20 divided into a number	÷

$4(y + 20)$

	Feedback
A	Use the correct operation.
B	Look for keywords in the phrase.
C	Correct!
D	Look for keywords in the phrase.

PTS: 1 DIF: Average
OBJ: 3-6.1 Translate Verbal Descriptions into Algebraic Expressions with One Variable
NAT: 7.EE.2 TOP: 3-6 Writing Algebraic Expressions
KEY: algebraic expressions | verbal expression

101. ANS: A

n represents the number of planks painted each day.
To separate into equal parts, use division.

$$\frac{\text{total number of planks}}{\text{planks painted each day}} = \frac{650}{n}$$

	Feedback
A	Correct!
B	Check the order of the numbers.
C	Use the correct operation to show how to separate into equal parts.
D	Use the correct operation to show how to separate into equal parts.

PTS: 1 DIF: Average
OBJ: 3-6.1 Translate Verbal Descriptions into Algebraic Expressions with One Variable
NAT: 7.EE.2 TOP: 3-6 Writing Algebraic Expressions
KEY: algebraic expressions | verbal expression

102. ANS: C

To find an algebraic expression for the number of days it takes to create *n* custom motorcycles, multiply to put equal parts together.
$78 \times n = 78n$

To find how many days it will take to create 6 custom motorcycles, substitute 6 for *n*.
$78 \times 6 = 468$ days

	Feedback
A	Use the correct operation to show how to put equal parts together.
B	Use the correct operation to show how to put equal parts together.
C	Correct!
D	Use the correct operation to show how to put equal parts together.

PTS: 1 DIF: Average
OBJ: 3-6.1 Translate Verbal Descriptions into Algebraic Expressions with One Variable
NAT: 7.EE.2 TOP: 3-6 Writing Algebraic Expressions
KEY: algebraic expressions | verbal expression

103. ANS: B

In order to write an expression, you must first write an expression for the number of video games Emmett has and then add that expression to the number of video games Jake has, *v*.

Emmett has one third as many video games as Jake plus *x* more, so he has $\frac{1}{3}v + x$ video games. Now, add *v* to $\frac{1}{3}v + x$.

$\frac{1}{3}v + x + v = \frac{1}{3}v + x + \frac{3}{3}v$ Add the expressions. Write like terms with a common denominator.

$= \frac{4}{3}v + x$ Combine like terms.

$= 1\frac{1}{3}v + x$ Simplify.

So, Jake and Emmett have $1\frac{1}{3}v + x$ video games.

	Feedback
A	This is the number of video games that Emmett has.
B	Correct!
C	Remember, to add fractional coefficients, write the fractions using a common denominator.
D	Be sure to read the problem carefully. Emmett has one third as many video games as Jake plus *x* more.

PTS: 1 DIF: Average
OBJ: 3-6.3 Translate Verbal Descriptions into Algebraic Expressions with More Than One Variable
NAT: 7.EE.2 | 7.EE.3 TOP: 3-6 Writing Algebraic Expressions
KEY: writing algebraic expressions | translating verbal descriptions

104. ANS: B

In order to write an expression, you must first write an expression for the amount of money she has in each type of coin.
She has *q* quarters, and each quarter is worth \$0.25, so she has $0.25q$ dollars in quarters.
She has *n* nickels, and each nickel is worth \$0.05, so she has $0.05n$ dollars in nickels.
Now, add the expressions together to get the amount of money she has in all.
$0.25q + 0.05n$
Carlotta has $0.25q + 0.05n$ dollars.

	Feedback
A	This is the amount of money in quarters Carlotta has.
B	Correct!
C	This is the amount of money in nickels Carlotta has.
D	This is the number of coins Carlotta has.

PTS: 1 DIF: Average
OBJ: 3-6.3 Translate Verbal Descriptions into Algebraic Expressions with More Than One Variable
NAT: 7.EE.2 | 7.EE.3 TOP: 3-6 Writing Algebraic Expressions
KEY: writing algebraic expressions | translating verbal descriptions

105. ANS: A

In order to write an expression, you must first define variables. Let x be the number of people who wanted large drinks, and y be the number of people who wanted medium drinks. Then, $2y$ represents the number of people who wanted small drinks.

To find the total amount of money Sabeeka spent, you need to add the amounts she paid for each size drink. To do this you can multiply the price of each size drink by the number of drinks Sabeeka bought.

She paid $2.5x$ for large drinks, $2y$ for medium drinks, and $1(2y)$, or $2y$, for small drinks.

So, an expression to represent the amount of money Sabeeka spent on drinks is:
$2.5x + 2y + 2y = 2.5x + 4y$.

	Feedback
A	Correct!
B	Be sure to account for each size of drink.
C	This is an expression for the number of drinks Sabeeka bought.
D	Twice as many people wanted small drinks as the number of people who wanted medium drinks, not large drinks.

PTS: 1 DIF: Difficult
OBJ: 3-6.3 Translate Verbal Descriptions into Algebraic Expressions with More Than One Variable
NAT: 7.EE.2 | 7.EE.3 TOP: 3-6 Writing Algebraic Expressions
KEY: writing algebraic expressions | translating verbal descriptions

106. ANS: C

Look for keywords in the phrase.
$7(y + 4)$

	Feedback
A	Look for keywords in the phrase.
B	Look for keywords in the phrase.
C	Correct!
D	Look for keywords in the phrase.

PTS: 1 DIF: Average
OBJ: 3-6.4 Translate Verbal Descriptions into Algebraic Expressions with Parentheses
NAT: 7.EE.2 TOP: 3-6 Writing Algebraic Expressions
KEY: algebraic expressions | verbal expression

107. ANS: D
In order to write an expression, you must first write an expression for the total amount of money Jen earned over the weekend. So, add the amount she earned on Saturday to the amount she earned on Sunday: $x + y$.
Now, multiply that amount by 25%. Remember to write the percent as a decimal before you multiply.
$0.25(x + y)$
So, Jen saves $0.25(x + y)$ dollars.

	Feedback
A	Jen saves 25% of the total amount she earned over the weekend, not just the amount she earned on Saturday.
B	Remember to write the percent as a decimal before you multiply.
C	This is the amount of money Jen earned over the weekend, not the amount she saved.
D	Correct!

PTS: 1 DIF: Average
OBJ: 3-6.4 Translate Verbal Descriptions into Algebraic Expressions with Parentheses
NAT: 7.EE.2 | 7.EE.3 TOP: 3-6 Writing Algebraic Expressions
KEY: writing algebraic expressions | translating verbal descriptions

108. ANS: C
In order to write an expression, first write an expression for the number of apples Antonio has left. He has a apples and gives 24 away, so he has $a - 24$ apples left.
He divides this number of apples among his 3 brothers and sisters, so each of his brothers and sisters gets one third of the number of apples he has left.
$\frac{1}{3}(a - 24)$

In order to find the expression that is not equivalent to $\frac{1}{3}(a - 24)$, rewrite each of the expressions in the answer choices.

$\frac{1}{3}(a - 24)$ represents the number of apples his brothers and sisters get.
$\frac{1}{3}a - 8 = \frac{1}{3}(a - 24)$ represents the number of apples his brothers and sisters get.
$\frac{1}{3}a - 24 = \frac{1}{3}(a - 8)$ does NOT represent the number of apples his brothers and sisters get.
$\frac{1}{3}a - \frac{1}{3}(24) = \frac{1}{3}(a - 24)$ represents the number of apples his brothers and sisters get.

	Feedback
A	This expression represents the number of apples his brothers and sisters get.
B	This expression represents the number of apples his brothers and sisters get.
C	Correct!
D	This expression represents the number of apples his brothers and sisters get.

PTS: 1 DIF: Average
OBJ: 3-6.4 Translate Verbal Descriptions into Algebraic Expressions with Parentheses
NAT: 7.EE.2 | 7.EE.3 TOP: 3-6 Writing Algebraic Expressions
KEY: writing algebraic expressions | translating verbal descriptions

109. ANS: D
The total Taji spent on songs is the cost for each song multiplied by the number of songs he bought. Total money spent on songs = 3×15.

The total Taji spent on books is the cost for each book multiplied by the number of books he bought. Total money spent on books = 9×3.

To find the total amount Taji spent on everything, add the total cost of the songs, books, and tax.
Total = $3 \times 15 + 9 \times 3 + 7$; \$79.

	Feedback
A	To find the total amount spent on books, multiply the cost for each book by the number of books bought.
B	Check for order of operations mistakes.
C	To find the total amount spent on songs, multiply the cost for each song by the number of songs bought.
D	Correct!

PTS: 1 DIF: Difficult
OBJ: 3-7.1 Solve Real-World Problems by Algebraic Reasoning
NAT: 7.EE.3 TOP: 3-7 Real-World Problems: Algebraic Reasoning
KEY: multi-step | expression | order of operations

110. ANS: D

	Feedback
A	Check that you multiplied correctly when clearing the fractions.
B	Be sure to multiply ALL of the terms in the original equation by the factor you used to clear the fractions.
C	Check your solution.
D	Correct!

PTS: 1 DIF: Average OBJ: 4-1.1 Identify Equivalent Equations
NAT: 7.EE.4 TOP: 4-1 Understanding Equivalent Equations
KEY: equivalent equations

111. ANS: D

	Feedback
A	Check your solution.
B	Be sure to multiply ALL of the terms in the original equation by the factor you used to clear the fractions.
C	Check that you multiplied correctly when clearing the fractions.
D	Correct!

PTS: 1 DIF: Average OBJ: 4-1.1 Identify Equivalent Equations
NAT: 7.EE.4 TOP: 4-1 Understanding Equivalent Equations
KEY: equivalent equations

112. ANS: A

	Feedback
A	Correct!
B	Check that you multiplied correctly when clearing the decimals.
C	Check that you multiplied correctly when clearing the decimals.
D	Be sure to multiply ALL of the terms in the original equation by the factor you used to clear the decimals.

PTS: 1 DIF: Average OBJ: 4-1.1 Identify Equivalent Equations
NAT: 7.EE.4 TOP: 4-1 Understanding Equivalent Equations
KEY: equivalent equations

113. ANS: C

$\frac{f}{77} - \frac{4}{7} = \frac{5}{7}$

$+\frac{4}{7} \quad +\frac{4}{7}$ Since $\frac{4}{7}$ is subtracted from $\frac{f}{77}$, add $\frac{4}{7}$ to both sides to undo the subtraction.

$\frac{f}{77} = \frac{9}{7}$

$(77)\frac{f}{77} = (77)\frac{9}{7}$ Since f is divided by 77, multiply both sides by 77 to undo the division.

$f = 99$ Simplify.

	Feedback
A	First, add to undo the subtraction. Then, multiply to undo the division.
B	First, add to undo the subtraction. Then, multiply to undo the division.
C	Correct!
D	Check the signs.

PTS: 1 DIF: Difficult
OBJ: 4-2.1 Solve Algebraic Equations with Variables on the Same Side of the Equation
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations KEY: two-step equations

114. ANS: A

Multiply each term inside the parentheses by the factor that is outside the parentheses. Then, combine like terms and solve for the variable.

	Feedback
A	Correct!
B	Use the Distributive Property to clear the parentheses first.
C	Check the signs.
D	First, multiply each term inside the parentheses by the factor that is outside the parentheses. Then, combine like terms and solve.

PTS: 1 DIF: Average
OBJ: 4-2.1 Solve Algebraic Equations with Variables on the Same Side of the Equation
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations KEY: multi-step equations

115. ANS: B
Use inverse operations to group terms with variables on the same side of the equation and to group the constant values on the opposite side of the equation. Then use division, which is the inverse operation of multiplication, to isolate the variable.

	Feedback
A	First, group the terms with variables on one side of the equation and group the constant values on the other side of the equation. Then, divide to isolate the variable.
B	Correct!
C	Use inverse operations to solve.
D	Combine the like terms correctly.

PTS: 1 DIF: Average
OBJ: 4-2.2 Solve Algebraic Equations with Variables on Both Sides of the Equation
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations
KEY: addition | division | multiplication | multi-step equations | solve | subtraction

116. ANS: B
Use inverse operations to group terms with variables on the same side of the equation and to group the constant values on the opposite side of the equation. Then use division, which is the inverse operation of multiplication, to isolate the variable.

	Feedback
A	First, group the terms with variables on one side of the equation and group the constant values on the other side of the equation. Then, divide to isolate the variable.
B	Correct!
C	Use inverse operations to solve.
D	Combine the like terms correctly.

PTS: 1 DIF: Average
OBJ: 4-2.2 Solve Algebraic Equations with Variables on Both Sides of the Equation
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations
KEY: addition | division | multiplication | multi-step equations | solve | subtraction

117. ANS: C

$$\begin{aligned} -4(24 + 8y) &= -64 \\ -96 - 32y &= -64 && \text{Distribute } -4. \\ -32y &= 32 && \text{Add 96 to both sides.} \\ y &= -1 && \text{Divide by } -32. \end{aligned}$$

	Feedback
A	Distribute over all the terms inside the parentheses.
B	Distribute before solving the equation.
C	Correct!
D	To isolate the variable after distributing, add the opposite of the constant term to both sides of the equation.

PTS: 1 DIF: Average OBJ: 4-2.3 Solve Algebraic Equations in Factored Form
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations
KEY: distributive | multi-step | solve | equation

118. ANS: C

Multiply each term inside the parentheses by the factor that is outside the parentheses. Then, combine like terms and solve for the variable.

	Feedback
A	First, multiply each term inside the parentheses by the factor that is outside the parentheses. Then, combine like terms and solve.
B	Use the Distributive Property to clear the parentheses first.
C	Correct!
D	Check the signs.

PTS: 1 DIF: Average OBJ: 4-2.3 Solve Algebraic Equations in Factored Form
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations
KEY: distributive | multi-step | solve | equation

119. ANS: C

$4(6 - 8x - 9x) + 7(9x + 2) = 23$	
$24 - 32x - 36x + 63x + 14 = 23$	Distributive Property
$38 - 5x = 23$	Combine coefficients.
$38 - 5x - 38 = 23 - 38$	Subtract 38 from both sides.
$-5x = -15$	Simplify.
$\frac{-5x}{-5} = \frac{-15}{-5}$	Divide both sides by 5.
$x = 3$	Simplify.

	Feedback
A	After removing the parentheses and combining like terms, isolate the variable.
B	Use the Distributive Property to remove the parentheses first.
C	Correct!
D	A negative number minus a negative number is equal to the sum of two negative numbers.

PTS: 1 DIF: Difficult OBJ: 4-2.3 Solve Algebraic Equations in Factored Form
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations
KEY: distributive | multi-step | solve | equation

120. ANS: D
Use subtraction, which is the inverse operation of addition, to isolate the variable.

	Feedback
A	Subtract to undo the addition.
B	Solve the inequality like you are solving an equation. Use inverse operations to isolate the variable.
C	Check the inequality symbol.
D	Correct!

PTS: 1 DIF: Average
OBJ: 4-4.1 Solve Algebraic Inequalities Using Addition and Subtraction
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: addition | inequality | subtraction | solve

121. ANS: A
To isolate the variable, use subtraction, which is the inverse operation of addition.

	Feedback
A	Correct!
B	Solve the inequality like you are solving an equation. Use inverse operations to isolate the variable.
C	Add to undo the subtraction.
D	Add to undo the subtraction.

PTS: 1 DIF: Average
OBJ: 4-4.1 Solve Algebraic Inequalities Using Addition and Subtraction
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: addition | inequality | subtraction | solve

122. ANS: B
Step 1: Rewrite both mixed numbers as improper fractions.
$9\frac{2}{3} = \frac{29}{3}$ and $3\frac{3}{6} = \frac{21}{6}$

Step 2: Solve the inequality.

$x + \frac{29}{3} \leq \frac{21}{6}$	Rewrite the inequality.
$x \leq \frac{21}{6} - \frac{29}{3}$	Subtract $\frac{29}{3}$ from both sides.
$x \leq \frac{21}{6} - \frac{58}{6}$	Rewrite the fractions with a common denominator.
$x \leq \frac{-37}{6} = -6\frac{1}{6}$	Simplify.

	Feedback
A	To solve the inequality, subtract the first mixed number from both sides of the inequality.
B	Correct!
C	Check the inequality symbol.
D	To solve the inequality, subtract the first mixed number from both sides of the inequality.

PTS: 1 DIF: Difficult
OBJ: 4-4.1 Solve Algebraic Inequalities Using Addition and Subtraction
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: addition | inequality | subtraction | solve

123. ANS: D
To isolate the variable, use multiplication, which is the inverse operation of division. Multiply both sides of the inequality by the denominator of the fraction to solve the inequality. When you multiply both sides of an inequality by a negative number, the inequality symbol reverses direction.

	Feedback
A	Multiply to undo the division.
B	Use inverse operations to solve.
C	Multiplying both sides by a negative number reverses the direction of the inequality symbol.
D	Correct!

PTS: 1 DIF: Average
OBJ: 4-4.3 Solve Algebraic Inequalities Using Multiplication and Division
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: division | inequality | multiplication | solve

124. ANS: C
To isolate the variable, use division, which is the inverse operation of multiplication. Divide both sides of the inequality by the denominator of the fraction to solve the inequality. When you divide both sides of an inequality by a negative number, the inequality symbol reverses direction.

	Feedback
A	Dividing both sides by a negative number reverses the direction of the inequality symbol.
B	Use inverse operations to solve.
C	Correct!
D	Divide to undo the multiplication.

PTS: 1 DIF: Average
OBJ: 4-4.3 Solve Algebraic Inequalities Using Multiplication and Division
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: division | inequality | multiplication | solve

125. ANS: C

$6(s - 8) \le -18$

$6s - 48 \le -18$	Use the Distributive Property.
$\underline{\quad +48 \quad +48}$	Since 48 is subtracted from 6*s*, add 8 to both sides to undo the subtraction.
$6s \quad \le 30$	Simplify.
$\frac{6s}{6} \le \frac{30}{6}$	Since 6 is multiplied by *s*, divide 6 from both sides to undo the multiplication.
$s \le 5$	Simplify.

	Feedback
A	Check your division.
B	Distribute before solving the equation.
C	Correct!
D	After distributing, use inverse operations to isolate the variable.

PTS: 1 DIF: Average OBJ: 4-4.4 Solve Multi-Step Algebraic Inequalities
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: addition | division | multiplication | solve | subtraction | multi-step inequalities

126. ANS: D

$-0.25 + 1.75x < -1.75 + 2.25x$

$-0.25 + 1.75 < 2.25x - 1.75x$	Combine like terms.
$1.5 < 0.5x$	Simplify.
$3 < x$	Divide both sides by 0.5.

	Feedback
A	The inequality symbol will only change if you multiply or divide by a negative number.
B	Combine only like terms.
C	When moving a term from one side of the inequality to the other side, subtract from both sides.
D	Correct!

PTS: 1 DIF: Difficult OBJ: 4-4.4 Solve Multi-Step Algebraic Inequalities
NAT: 7.EE.4 TOP: 4-4 Solving Algebraic Inequalities
KEY: addition | division | multiplication | solve | subtraction | multi-step inequalities

127. ANS: D
Set up an inequality.
number of players • amount per player + current amount ≥ needed amount

Solve for the amount per player. If necessary, round your answer up to the next higher cent.

	Feedback
A	This is the amount the whole team needs to raise. To find the average amount, divide by the number of team members.
B	Use inverse operations to solve.
C	Set up an inequality and solve.
D	Correct!

PTS: 1 DIF: Average
OBJ: 4-5.1 Solve Real-World Problems Involving Algebraic Inequalities
NAT: 7.EE.4.b TOP: 4-5 Real-World Problems: Algebraic Inequalities
KEY: addition | division | multiplication | solve | subtraction | two-step inequalities

128. ANS: B
If the sum of the measures of two angles is 90°, then the angles are complementary angles.

	Feedback
A	Find the sum of the angle measures.
B	Correct!
C	The angles are supplementary if the sum of the measures is 180°.

PTS: 1 DIF: Average OBJ: 6-1.1 Explore the Properties of Complementary Angles
NAT: 7.G.5 TOP: 6-1 Complementary, Supplementary, and Adjacent Angles
KEY: angle | complementary angles

129. ANS: A
The sum of the angle measures is 90°
$32° + b = 90°$
So, $b = 58°$.

	Feedback
A	Correct!
B	The sum of the angle measures is 90 degrees.
C	The sum of the angle measures is 90 degrees.
D	The sum of the angle measures is 90 degrees.

PTS: 1 DIF: Average OBJ: 6-1.3 Explore the Properties of Adjacent Angles
NAT: 7.G.5 TOP: 6-1 Complementary, Supplementary, and Adjacent Angles
KEY: angle | measurement | relationship

130. ANS: C
The sum of the angle measures is 180°
$78° + c = 180°$
So, $c = 102°$.

	Feedback
A	The sum of the angle measures is 180 degrees.
B	The sum of the angle measures is 180 degrees.
C	Correct!
D	The sum of the angle measures is 180 degrees.

PTS: 1 DIF: Average
OBJ: 6-1.4 Explore the Properties of Adjacent Angles on a Straight Line
NAT: 7.G.5 TOP: 6-1 Complementary, Supplementary, and Adjacent Angles
KEY: angle | measurement | relationship | straight line

131. ANS: B
The sum of the angle measures is 180°
$45° + 45° + x + 30° = 180°$

$$120° + x = 180°$$

$$x = 60°$$

	Feedback
A	The sum of the angle measures is 180 degrees.
B	Correct!
C	The sum of the angle measures is 180 degrees.
D	The sum of the angle measures is 180 degrees.

PTS: 1 DIF: Average
OBJ: 6-1.4 Explore the Properties of Adjacent Angles on a Straight Line
NAT: 7.G.5 TOP: 6-1 Complementary, Supplementary, and Adjacent Angles
KEY: angle | measurement | relationship | straight line

132. ANS: B

To solve this problem, remember that the sum of the measures of angles at a point is 360°. So, you can write and solve an equation to find the value of x.

$$m\angle BOA + m\angle AOC + m\angle BOC = 360°$$
$$98 + 142 + 3x = 360$$
$$240 + 3x = 360$$
$$240 + 3x - 240 = 360 - 240$$
$$3x = 120$$
$$\frac{3x}{3} = \frac{120}{3}$$
$$x = 40$$

	Feedback
A	The sum of the measures of angles at a point is 360°. So, you can write and solve an equation to find the value of x. Be sure to perform the correct operations as you solve the equation.
B	Correct!
C	This is the measure of angle BOC. You want to find the value of x.
D	The sum of the measures of angles at a point is 360°. So, you can write and solve an equation to find the value of x.

PTS: 1 DIF: Average
OBJ: 6-2.1 Explore and Apply the Properties of Angles at a Point
NAT: 7.EE.4.a | 7.G.5 TOP: 6-2 Angles that Share a Vertex
KEY: angle | measure | solving equations

133. ANS: B

The three angle measures in a triangle add up to 180°. Add the two given angle measures, and subtract the sum from 180°.

	Feedback
A	The sum of the angle measures in a triangle is 180°.
B	Correct!
C	The sum of the angle measures in a triangle is 180°.
D	To find the missing angle, subtract the sum of the two given angles from 180°.

PTS: 1 DIF: Average
OBJ: 6-4.1 Explore and Apply the Properties of the Interior Angles of a Triangle
NAT: 7.G.5 TOP: 6-4 Interior and Exterior Angles
KEY: interior angles | angle measures | obtuse triangle

134. ANS: B

An equilateral triangle has three congruent sides and three congruent angles.

$\frac{180}{3} = 60$

	Feedback
A	This is the sum of the angle measures in the triangle. Use it to find the unknown angle measures.
B	Correct!
C	The sum of the angle measures in a triangle is 180°.
D	The sum of the angle measures in a triangle is 180°.

PTS: 1 DIF: Average
OBJ: 6-4.1 Explore and Apply the Properties of the Interior Angles of a Triangle
NAT: 7.G.5 TOP: 6-4 Interior and Exterior Angles
KEY: interior angles | angle measures | equilateral triangle

135. ANS: B

The measure of an exterior angle of a triangle is equal to the sum of the measures of its non-adjacent interior angles. Angle 4 is an exterior angle, and the non-adjacent interior angles are angles 1 and 2. So, you know that $m\angle 1 + m\angle 2 = m\angle 4$.

None of the other statements are true.

	Feedback
A	This statement is not true. Think about what you know about the measure of an exterior angle of a triangle.
B	Correct!
C	This statement is not true. Think about what you know about the measure of an exterior angle of a triangle.
D	This statement is not true. Think about what you know about the measure of an exterior angle of a triangle.

PTS: 1 DIF: Average
OBJ: 6-4.2 Explore and Apply the Properties of the Exterior Angles of a Triangle
NAT: 7.G.5 TOP: 6-4 Interior and Exterior Angles
KEY: triangles | angle measures | exterior angles | interior angles

136. ANS: C
The measure of an exterior angle of a triangle is equal to the sum of the measures of its non-adjacent interior angles. So, you can write and solve an equation to find the value of x.

$$55° + x = 135° \quad .$$
$$55° + x - 55° = 135° - 55°$$
$$x = 80°$$

	Feedback
A	Remember that the measure of an exterior angle of a triangle is equal to the sum of its non-adjacent interior angles.
B	Remember that the measure of an exterior angle of a triangle is equal to the sum of its non-adjacent interior angles.
C	Correct!
D	Remember that the measure of an exterior angle of a triangle is equal to the sum of its non-adjacent interior angles.

PTS: 1 DIF: Average
OBJ: 6-4.2 Explore and Apply the Properties of the Exterior Angles of a Triangle
NAT: 7.G.5 TOP: 6-4 Interior and Exterior Angles
KEY: triangles | angle measures | exterior angles | interior angles

137. ANS: D
A solid cylinder has a curved surface and two parallel bases that are congruent circles.

	Feedback
A	A cone has one circular base, not two circular bases.
B	The bases of a prism are polygons, not circles.
C	A sphere has a curved surface where every point on the surface is an equal distance from the center of the sphere.
D	Correct!

PTS: 1 DIF: Average OBJ: 8-1.1 Recognize Cylinders
TOP: 8-1 Recognizing Cylinders, Cones, Spheres, and Pyramids
KEY: solid figure | classify | name | cylinder

138. ANS: D
A cone has a circular base, a curved surface (also called a lateral surface), and one vertex.

	Feedback
A	A cylinder has a curved surface and two parallel circular bases.
B	The bases of a prism are polygons, not circles.
C	A sphere has a curved surface where every point on the surface is an equal distance from the center of the sphere.
D	Correct!

PTS: 1 DIF: Average OBJ: 8-1.2 Recognize Cones
TOP: 8-1 Recognizing Cylinders, Cones, Spheres, and Pyramids
KEY: solid figure | classify | name | cone

139. ANS: C
A sphere has a curved surface. Every point on the surface is an equal distance from the center of the sphere.

	Feedback
A	Name the figure correctly.
B	A polyhedron is a three-dimensional figure whose faces are all polygons.
C	Correct!
D	Name the figure correctly.

PTS: 1 DIF: Average OBJ: 8-1.3 Recognize Spheres
TOP: 8-1 Recognizing Cylinders, Cones, Spheres, and Pyramids
KEY: sphere

140. ANS: B
A sphere has a curved surface. Every point on the curved surface is an equal distance from the center of the sphere. The distance from the center to any point on the surface of a sphere is called a radius. A half of a sphere is called a hemisphere. So the only false statement is: Every point on a sphere is an equal distance from a point outside of the sphere.

	Feedback
A	This statement is true. Think about the definition of a sphere in order to find the false statement.
B	Correct!
C	This statement is true. Think about the definition of a sphere in order to find the false statement.
D	This statement is true. Think about the definition of a sphere in order to find the false statement.

PTS: 1 DIF: Average OBJ: 8-1.3 Recognize Spheres
TOP: 8-1 Recognizing Cylinders, Cones, Spheres, and Pyramids
KEY: sphere

141. ANS: A
The cross section is the intersection of the cylinder and the plane. The cross section is a circle.

	Feedback
A	Correct!
B	The cross section is two dimensional.
C	The cross section is the intersection of the plane and the cylinder.
D	The cross section is the intersection of the plane and the cylinder.

PTS: 1 DIF: Average OBJ: 8-1.4 Identify Cross Sections of Solids
NAT: 7.G.3 TOP: 8-1 Recognizing Cylinders, Cones, Spheres, and Pyramids
KEY: cross sections | cylinder

142. ANS: B
The volume of a cylinder is the area of its base times its height.
$V = Bh$ or $V = \pi r^2 h$, where $B = \pi r^2$

	Feedback
A	Use the formula for the volume of a cylinder.
B	Correct!
C	To find the volume of a cylinder, multiply π by the square of the radius by the height.
D	The volume of a cylinder is the area of its base times its height.

PTS: 1 DIF: Average OBJ: 8-2.1 Find the Volume of a Cylinder
NAT: 7.G.6 TOP: 8-2 Finding Volume and Surface Area of Cylinders
KEY: cylinder | volume

143. ANS: B
The volume of a cone is one-third of the area of the circular base times the height.
$V = \frac{1}{3} Bh$ or $V = \frac{1}{3} \pi r^2 h$, where r is the radius of the circular base.

	Feedback
A	To find the volume of a cone, multiply $\frac{1}{3} \pi$ by the square of the radius by the height.
B	Correct!
C	Use the formula for the volume of a cone.
D	The volume of a cone is one-third of the area of the circular base times the height.

PTS: 1 DIF: Average OBJ: 8-3.1 Find the Volume of a Pyramid and a Cone
NAT: 7.G.6 TOP: 8-3 Finding Volume and Surface Area of Pyramids and Cones
KEY: volume | cone

144. ANS: C
The slant height of a cone is the distance between the vertex and a point on the circumference of the base. The slant of the cone is $\overline{AC}$.

	Feedback
A	This is the height of the cone. Think of the definition of the slant height of a cone.
B	This is the radius of the cone. Think of the definition of the slant height of a cone.
C	Correct!
D	This is an arc, not a segment. Think of the definition of the slant height of a cone.

PTS: 1 DIF: Average OBJ: 8-3.2 Find the Surface Area of a Cone
NAT: 7.G.1 TOP: 8-3 Finding Volume and Surface Area of Pyramids and Cones
KEY: surface area | cone

145. ANS: B

The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$, where r is the radius of the sphere.

	Feedback
A	The volume of a sphere is $\frac{4}{3}\pi$ times the cube of the radius.
B	Correct!
C	Use the formula for the volume of a sphere.
D	The volume of a sphere is $\frac{4}{3}\pi$ times the cube of the radius.

PTS: 1 DIF: Average OBJ: 8-4.1 Find the Volume of a Sphere
NAT: 7.G.6 TOP: 8-4 Finding Volume and Surface Area of Spheres
KEY: volume | sphere

NUMERIC RESPONSE

146. ANS: $\frac{1}{13}$

PTS: 1 DIF: Average OBJ: 1-1.3 Express Integers and Fractions in m/n Form
TOP: 1-1 Representing Rational Numbers on the Number Line KEY: fraction | simplify | rational number

147. ANS:
22.5

$A = lw$

$= 4.25 \times 5.3$

$= 22.525$

To 3 significant digits, the area is 22.5 square centimeters.

PTS: 1 DIF: Average
OBJ: 1-5.3 Round Integers and Decimals to a Given Number of Significant Digits
NAT: 7.G.6 TOP: 1-5 Introducing Significant Digits KEY: significant digits

148. ANS: 3

PTS: 1 DIF: Average OBJ: 2-1.3 Add Integers with Different Signs
TOP: 2-1 Adding Integers KEY: addition | integer

149. ANS: $180

PTS: 1 DIF: Average OBJ: 2-2.1 Subtract Integers by Adding Their Opposites
TOP: 2-2 Subtracting Integers KEY: integer | subtraction

150. ANS: 70

PTS: 1 DIF: Difficult
OBJ: 2-4.1 Use Addition, Subtraction, Multiplication, and Division with Integers
NAT: 7.NS.3 TOP: 2-4 Operations with Integers
KEY: multi-step | order of operations | integer

151. ANS: 63

PTS: 1 DIF: Difficult OBJ: 2-5.4 Divide Rational Numbers
NAT: 7.NS.2.c TOP: 2-5 Operations with Rational Numbers
KEY: multi-step | division | fraction | rational number | mixed number

152. ANS: $21.29

PTS: 1 DIF: Difficult OBJ: 2-6.3 Divide Numbers in Decimals or Percent Form
NAT: 7.NS.2.c TOP: 2-6 Operations with Decimals KEY: multi-step | decimal | division

SHORT ANSWER

153. ANS:
0.625

$$\frac{5}{8} = 8\overline{)\,5.000}\,\overline{0.625}$$

PTS: 1 DIF: Average
OBJ: 1-2.1 Write Rational Numbers as Terminating Decimals Using Long Division
NAT: 7.NS.2.d TOP: 1-2 Writing Rational Numbers as Decimals
KEY: convert | decimal | fraction | rational number

154. ANS:

a. 5.02, 5.2, $5\frac{1}{4}$, 5.333, and $5\frac{2}{5}$

b. $5\frac{2}{5} = 5.4$

$5.2 = 5\frac{1}{5}$

$5.02 = 5\frac{1}{50}$

$5\frac{1}{4} = 5.25$

$5.333 = 5\frac{1}{3}$

PTS: 1 DIF: Average OBJ: 1-4.4 Order Real Numbers on the Real Number Line
NAT: 7.NS.2.d TOP: 1-4 Introducing the Real Number System
KEY: compare | decimal | fraction | order

155. ANS:
\$11

$-88 + 18 + 34 + 25 = -11$

PTS: 1 DIF: Average OBJ: 2-1.3 Add Integers with Different Signs
TOP: 2-1 Adding Integers KEY: addition | integer

156. ANS:
–13°F

$-7 - 6 = -13$

PTS: 1 DIF: Average OBJ: 2-2.1 Subtract Integers by Adding Their Opposites
TOP: 2-2 Subtracting Integers KEY: integer | subtraction

157. ANS:
a. –\$2008
$-6024 \div 3 = -2008$

b. 2 more months
$-6024 + (-2008) = -8032$
$-8032 + (-2008) = -10,040$

PTS: 1 DIF: Average OBJ: 2-3.2 Divide Integers
TOP: 2-3 Multiplying and Dividing Integers KEY: integer | division

158. ANS:
$\frac{29}{35}$ of the pizza

$\frac{3}{7} + \frac{2}{5} = \frac{15}{35} + \frac{14}{35}$

$= \frac{29}{35}$

PTS: 1 DIF: Average OBJ: 2-5.1 Add Rational Numbers
NAT: 7.NS.1.d TOP: 2-5 Operations with Rational Numbers
KEY: addition | fraction | rational number

159. ANS:
1.77 pounds

$4.56 - 2.79 = 1.77$

PTS: 1 DIF: Average OBJ: 2-6.1 Add and Subtract Decimals
NAT: 7.NS.1.d TOP: 2-6 Operations with Decimals KEY: decimal | subtraction

160. ANS:
$0.8y$ and $1.4y$; $2.2y + 4$

Like terms are terms that have identical variable parts, so $0.8y$ and $1.4y$ are like terms. To simplify the expression $0.8y + 1.4y + 4$, add the like terms.

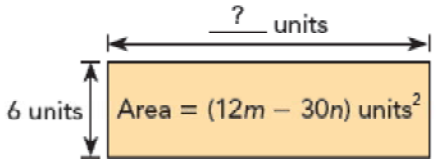
$0.8y + 1.4y + 4 = 2.2y + 4$

PTS: 1 DIF: Average
OBJ: 3-3.1 Simplify Algebraic Expressions with More Than Two Terms and Involving Decimal Coefficients NAT: 7.EE.2 TOP: 3-3 Simplifying Algebraic Expressions
KEY: like terms | simplifying | decimal | algebraic expressions

161. ANS:
No; You can still factor out –1 from the expression.

PTS: 1 DIF: Average OBJ: 3-5.2 Factor Algebraic Expressions with Negative Terms
NAT: 7.EE.1 | 7.G.6 TOP: 3-5 Factoring Algebraic Expressions
KEY: factoring | algebraic expressions

162. ANS:



Since the area of a rectangle is its length times its width, you can find the length of the rectangle by factoring the width from the expression for the area. So, first write the expression for the area using addition. Then, factor the width, 6, from the expression in order to find the length.

$12m - 30n = 12m + (-30n)$
$= 6(2m) + (6)(-5n)$
$= 6(2m - 5n)$

So, the length of the rectangle is $(2m - 5n)$ units.

PTS: 1 DIF: Average
OBJ: 3-6.2 Translate Verbal Descriptions into Algebraic Expressions with One Variable Using Diagrams
NAT: 7.EE.1 | 7.G.6 TOP: 3-6 Writing Algebraic Expressions
KEY: writing algebraic expressions | diagrams

163. ANS:

a. $8x - 20 = 76$

"twenty less than" = "– 20"
"eight times a number" = "$8x$"
"is seventy-six" = "76"
$8x - 20 = 76$

b. $x = 12$

$$8x - 20 = 76$$
$$8x - 20 + 20 = 76 + 20$$
$$8x = 96$$
$$\frac{8x}{8} = \frac{96}{8}$$
$$x = 12$$

PTS: 1 DIF: Average
OBJ: 4-2.1 Solve Algebraic Equations with Variables on the Same Side of the Equation
NAT: 7.EE.4 TOP: 4-2 Solving Algebraic Equations KEY: two-step equations

164. ANS:

There are 128 houses in Antonio's subdivision.

Let A be the number of houses in Antonio's subdivision.

$$\frac{A}{4} + 15 = 47$$
$$\frac{A}{4} + 15 - 15 = 47 - 15$$
$$\frac{A}{4} = 32$$
$$\frac{A}{4} \times 4 = 32 \times 4$$
$$A = 128$$

PTS: 1 DIF: Average OBJ: 4-3.1 Solve Real-World Problems Algebraically
NAT: 7.EE.4.a TOP: 4-3 Real-World Problems: Algebraic Equations
KEY: addition | division | multiplication | multi-step equations | solve | subtraction | problem solving

165. ANS:
Silvia must score an 84 on her fourth test.
Let x be her score on the fourth test.

$$\frac{86 + 78 + 92 + x}{4} = 85$$

$$\frac{86 + 78 + 92 + x}{4} \times 4 = 85 \times 4$$

$$256 + x = 340$$

$$256 + x - 256 = 340 - 256$$

$$x = 84$$

PTS: 1 DIF: Average OBJ: 4-3.1 Solve Real-World Problems Algebraically
NAT: 7.EE.4.a TOP: 4-3 Real-World Problems: Algebraic Equations
KEY: addition | division | multiplication | multi-step equations | solve | subtraction | problem solving

166. ANS:
12 days

$$6d + 2.5d = 90 + d$$

$$8.5d - d = 90 + d - d$$

$$\frac{7.5d}{7.5} = \frac{90}{7.5}$$

$$d = 12$$

PTS: 1 DIF: Average OBJ: 4-3.1 Solve Real-World Problems Algebraically
NAT: 7.EE.4.a TOP: 4-3 Real-World Problems: Algebraic Equations
KEY: addition | division | multiplication | multi-step equations | solve | subtraction | problem solving

167. ANS:
at least \$196
Let t be the total money raised.

$$43 \le \frac{t - 24}{4}$$

$$43 \times 4 \le \frac{t - 24}{4} \times 4$$

$$172 \le t - 24$$

$$172 + 24 \le t - 24 + 24$$

$$196 \le t$$

PTS: 1 DIF: Average
OBJ: 4-5.1 Solve Real-World Problems Involving Algebraic Inequalities
NAT: 7.EE.4.b TOP: 4-5 Real-World Problems: Algebraic Inequalities
KEY: addition | division | multiplication | solve | subtraction | two-step inequalities

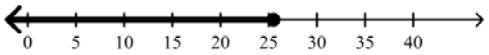
168. ANS:
a. at most $25.50

$7x \le 178.5$

$\frac{7x}{7} \le \frac{178.5}{7}$

$x \le 25.5$

b. Graph $x \le 25.5$.



PTS: 1 DIF: Average
OBJ: 4-5.1 Solve Real-World Problems Involving Algebraic Inequalities
NAT: 7.EE.4.b TOP: 4-5 Real-World Problems: Algebraic Inequalities
KEY: addition | division | multiplication | solve | subtraction | inequality

169. ANS:
127°, 127°, and 53°

$180° - 53° = 127°$
Two of the angles are supplementary to the 53° angle. They each measure $180° - 53° = 127°$. The last angle is a vertical angle to the 53° angle, so it is congruent to the 53° angle.

PTS: 1 DIF: Average OBJ: 6-2.2 Explore and Apply the Properties of Vertical Angles
NAT: 7.G.5 TOP: 6-2 Angles that Share a Vertex
KEY: angle | measurement | relationship | vertical angles | supplementary angles