Entering 8th Grade

Summer Math Work

WCS

Name: _____

Dear Families,

It is so important for children to keep learning over the summer! Research shows that students can lose up to 2.6 months of math learning during the summer months. Research also shows that just 2 hours of work each week in math can help prevent this summer learning loss. The work in this packet has been designed to review last year's learned math skills and prepare your child for success in math this year. This will also be your child's first math grade of the year and you will need to send it to school when we return in the fall.

In this packet, you will find about 10 weeks of work, with 1-2 hours of work each week. We suggest you create a schedule that works for your family each week. Maybe you spend 15-30 minutes in the mornings working on this math work each day or maybe your child completes it all on Sunday evenings-- whatever works for you. Please do try to spread it over 10 weeks- don't try to do it all the last week of summer!

Happy summer!

Evaluating Algebraic Expressions

1. Substitute the given values for the variables in the expression
2. Evaluate the expression using the order of operations
   - Parentheses/Brackets (inside to outside)
   - Exponents
   - Multiplication/Division (left to right)
   - Addition/Subtraction (left to right)

ex: $9x^2 - 4(y + 3z)$
for $x = -3$, $y = 2$, $z = 5$

$9(-3)^2 - 4(2 + 3 \cdot 5)$

$9(-3)^2 - 4(2 + 15)$

$9(-3)^2 - 4 \cdot 17$

$9 \cdot 9 - 4 \cdot 17$

$81 - 4 \cdot 17$

$81 - 68 = \boxed{13}$

The Distributive Property

1. Multiply the number outside the parentheses by each term in the parentheses.
2. Keep the addition/subtraction sign between each term.

ex: $5(8x - 3)$

$5(8x - 3)$

$5(8x) - 5(3)$

$\boxed{40x - 15}$

Simplifying Algebraic Expressions

1. Clear any parentheses using the Distributive Property
2. Add or subtract like terms (use the sign in front of each term to determine whether to add or subtract)

ex: $2(3x - 4) - 12x + 9$

$2(3x - 4) - 12x + 9$

$6x - 8 - 12x + 9$

$\boxed{-6x + 1}$

Evaluate each expression for $a = 9$, $b = -3$, $c = -2$, $d = 7$. Show your work.

1. $a - cd$	2. $2b^3 + c^2$	3. $\frac{a + d - c}{b}$	4. $(a - b)^2 + d(a + c)$
5. $4c - (b - a)$ ex: $4(-2) - (-3-9)$ $= -8 - (-12)$ $= 4$	6. $\frac{a}{b} - 5a$	7. $2bc + d(12 - 5)$	8. $b + 0.5[8 - (2c + a)]$

Simplify each expression using the Distributive Property.

9. $5(2g - 8)$ ex: $10g - 40$	10. $7(y + 3)$	11. $-3(4w - 3)$	12. $(6r + 3)2$

Simplify each expression, showing all work.

13. $8(x + 1) - 12x$	14. $6w - 7 + 12w - 3z$ ex: $18w - 3z - 7$	15. $9n - 8 + 3(2n - 11)$	16. $3(7x + 4y) - 2(2x + y)$
17. $(15 + 8d)(-5) - 24d + d$	18. $9(b - 1) - c + 3b + c$	19. $20f - 4(5f + 4) + 16$	20. $8(h - 4) - h - (h + 7)$

Solving One-Step Equations

1. Cancel out the number on the same side of the equal sign as the variable using inverse operations (addition/subtraction; multiplication/division)
2. Be sure to do the same thing to both sides of the equation!

ex: $-18 = 6j$

$\frac{-18}{6} = \frac{6j}{6}$

$-3 = j \rightarrow \boxed{j = -3}$

Solving Two-Step Equations

1. Undo operations one at a time with inverse operations, using the order of operations in reverse (i.e. undo addition/subtraction before multiplication/division)
2. Be sure to always do the same thing to both sides of the equation!

ex: $\frac{a}{7} - 12 = -9$

$\frac{a}{7} - 12 = -9$

$+12 \quad +12$

$\frac{a}{7} = 3 \times 7$

$\boxed{a = 21}$

Solving Multi-Step Equations

1. Clear any parentheses using the Distributive Property
2. Combine like terms on each side of the equal sign
3. Get the variable terms on the same side of the equation by adding/subtracting a variable term to/from both sides of the equation to cancel it out on one side
4. The equation is now a two-step equation, so finish solving it as described above

ex: $5(2x - 1) = 3x + 4x - 1$

$10x - 5 = 3x + 4x - 1$

$10x - 5 = 7x - 1$

$-7x \quad -7x$

$3x - 5 = -1$

$+5 \quad +5$

$\frac{3x}{3} = \frac{4}{3}$

$\boxed{x = \frac{4}{3}}$

Solve each equation, showing all work.

21. $f - 64 = -23$	22. $-7 = 2d$	23. $\frac{b}{-12} = -6$ ex: $\frac{b}{-12} = -6$ Multiply each side by -12 $b = +72$	24. $13 = m + 21$
25. $5x - 3 = -28$	26. $\frac{w + 8}{-3} = -9$	27. $-8 + \frac{h}{4} = 13$	28. $22 = 6y + 7$
29. $8x - 4 = 3x + 1$	30. $-2(5d - 8) = 20$	31. $7r + 21 = 49r$	32. $-9g - 3 = -3(3g + 2)$
33. $5(3x - 2) = 5(4x + 1)$	34. $3d - 4 + d = 8d - (-12)$	35. $f - 6 = -2f + 3(f - 2)$	36. $-2(y - 1) = 4y - (y + 2)$

Slope & Rate of Change

Finding the Slope Given Two Points: Use the coordinates from the points in the slope formula:

$$\text{Slope } (m) = \frac{y_2 - y_1}{x_2 - x_1}$$

ex: $(4, -2), (-3, 8)$ (x_1, y_1, x_2, y_2)

$$m = \frac{8 - (-2)}{-3 - 4} = \frac{10}{-7} = \boxed{-\frac{10}{7}}$$

Finding the Rate of Change From a Table: Determine the amount the dependent variable (y) is changing and the amount the independent variable (x) is changing.

$$\text{Rate of Change} = \frac{\text{change in } y}{\text{change in } x}$$

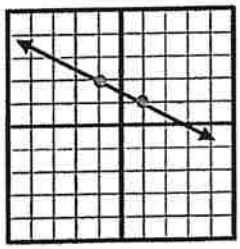
ex:

x	# months	3	5	7	9
y	Cost ($)	80	130	180	230

(+2, +2, +2 across the months; +50, +50, +50 across the costs)

$$m = \frac{50}{2} = \boxed{25 \text{ dollars/month}}$$

Finding the Slope From a Graph: Choose 2 points on the graph. Find the vertical change (rise) and horizontal change (run) between the 2 points and write it as a fraction $\frac{\text{rise}}{\text{run}}$. (Up is positive, down is negative, right is positive, and left is negative).



rise = +1
run = −2

$$m = \frac{1}{-2} = \boxed{-\frac{1}{2}}$$

Graphing Linear Equations

Slope-Intercept Form: $y = mx + b$ (m: slope, b: y-intercept)

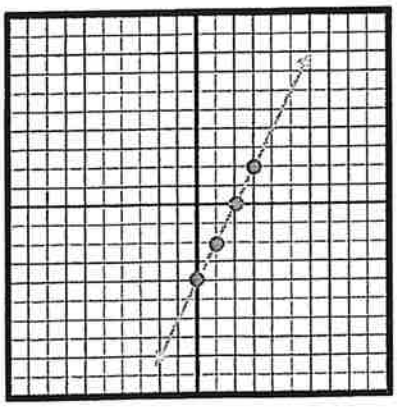
ex: $y = 2x - 4$

y-intercept: −4

slope: $2 = \frac{2}{1}$ ← rise / run

How To Graph:

1. Make a point on the y-axis at the y-intercept.
2. Use the slope to determine where to make the next point. The numerator tells you the rise (how far up/down) and the denominator tells you the run (how far right/left) to make the next point.
3. Repeat to make more points and then connect the points with a line.



Find the slope of the line that passes through the points. Show your work.

Find the slope of the line that passes through the points.

61. (-5, 3), (2, 1)

62. (8, 4), (11, 6)

63. (9, 3), (9, -1)

64. (-4, -2), (-6, 4)

Find the rate of change. Show your work.

65.

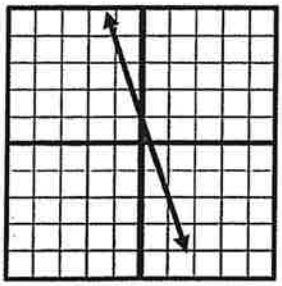
Number of Hours	3	6	9	12
Distance (in miles)	135	270	405	540

66.

Number of Weeks	1	3	5	7
Pounds	173	169	165	161

Find the slope of the line.

67.



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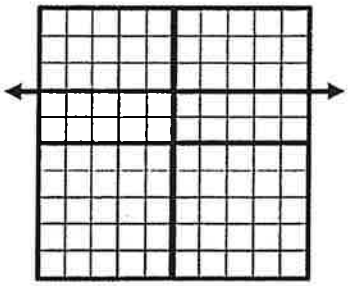

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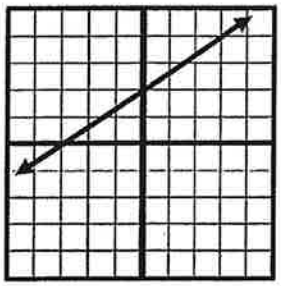
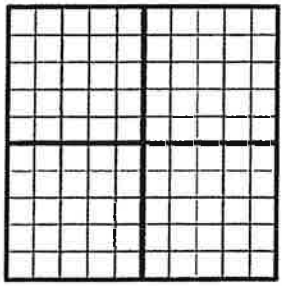
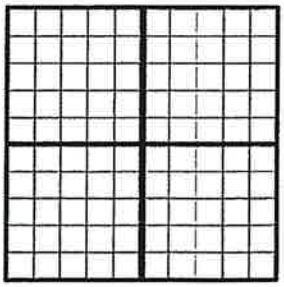


Graph the line.

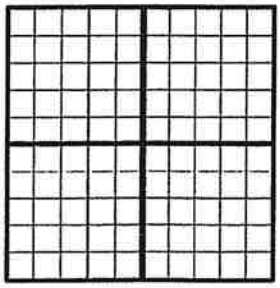
70. $y = -x - 3$



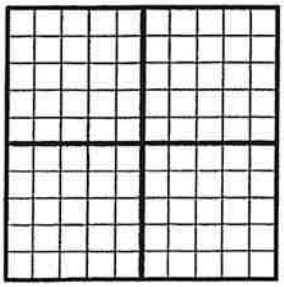
71. $y = \frac{1}{3}x + 2$



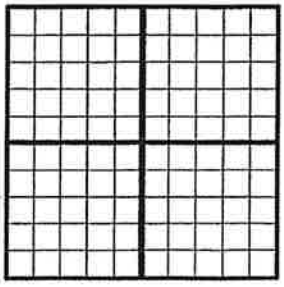
72. $y = -3x - 1$



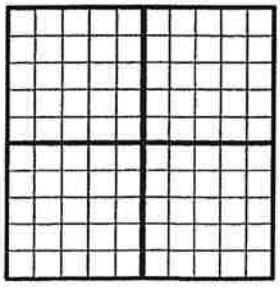
73. $y = -\frac{3}{2}x - 2$



74. $y = 2x + 1$



75. $y = \frac{1}{4}x$



Operations with Integers

Adding Integers

- Negative + Negative: Add the absolute values of the two numbers and make the answer negative.

  ex: $-5 + (-9) \longrightarrow 5 + 9 = 14 \longrightarrow$ answer: $\boxed{-14}$

- Negative + Positive (or Positive + Negative): Subtract the absolute values of the two numbers (larger minus smaller) and take the sign of the number with the greater absolute value.

  ex: $-7 + 12 \longrightarrow 12 - 7 = 5 \longrightarrow 12 > 7$, so answer is positive $\longrightarrow$ answer: $\boxed{5}$

  ex: $6 + (-9) \longrightarrow 9 - 6 = 3 \longrightarrow 9 > 6$, so answer is negative $\longrightarrow$ answer: $\boxed{-3}$

Subtracting Integers

- Keep the first number the same, change the subtraction sign to an addition sign, and change the sign of the second number. Then use the integer addition rules.

  ex: $-3 - 9 \longrightarrow -3 + (-9) = \boxed{-12}$

  ex: $15 - (-8) \longrightarrow 15 + 8 = \boxed{23}$

  ex: $-6 - (-4) \longrightarrow -6 + 4 = \boxed{-2}$

Multiplying & Dividing Integers

Ignore the signs and multiply or divide as usual. Then determine the sign of the answer using the following rules:

- Negative · or ÷ Negative = Positive
- Negative · or ÷ Positive (or Positive · or ÷ Negative) = Negative

  ex: $-3 \cdot (-5) \longrightarrow 3 \cdot 5 = 15 \longrightarrow$ neg · neg = pos $\longrightarrow$ answer: $\boxed{15}$

  ex: $48 \div (-6) \longrightarrow 48 \div 6 = 8 \longrightarrow$ pos ÷ neg = neg $\longrightarrow$ answer: $\boxed{-8}$

Order of Operations

Parentheses
Exponents
Multiplication & Division (left to right)
Addition & Subtraction (left to right)

Find the sum or difference.

1. $-80 + 77$
2. $77 + 160$
3. $-64 + (-33)$
4. $104 - (-92)$
5. $-105 - (-122)$
6. $185 - (-154)$
7. $-53 - (-59)$
8. $-6 + (-35)$
9. $15 - (-26) - (-39)$
10. $-93 + 191 + (-179)$
11. $18 + (-34) + 52$
12. $-50 - (-93) + (-17)$

Find the product or quotient.

13. $60 \div 12$
14. $-194 \div (-2)$
15. $88 \cdot (-2)$
16. $-12 \cdot 10$
17. $-10 \cdot (-11)$
18. $90 \div (-6)$
19. $3 \cdot (-59)$
20. $-7 \cdot (-2)$
21. $-28 \div (-88) \cdot (-22)$
22. $-56 \cdot 140 \div (-80)$
23. $108 \div (-11) \cdot (-11)$
24. $-84 \cdot (-17) \div 42$

Evaluate the numerical expression. (Be sure to use the order of operations!)

25. $-78 + (-2) \cdot (-56)$
26. $-65 + 6 \div (-3) + 40$
27. $-94 - (84 - 10)$
28. $43 + (-23) - (-57)$
29. $-15 - (-11) + 5 \cdot (-4)$
30. $-26 - (-64) + (-93)$
31. $-84 \div 4 + (-20)$
32. $-56 + (-50) + (-10) \cdot (-9)$

Operations with Rational Numbers

Adding & Subtracting Rational Numbers

Determine whether you should add or subtract using integer rules. Then add or subtract.

- Decimals: Line up the decimal points. Then add or subtract and bring the decimal point down. Use integer rules to determine the sign of the answer.

ex: $-9.8 + 6.24 \longrightarrow$ neg + pos: subtract $\longrightarrow$ $\begin{array}{r} 9.80 \\ -\ 6.24 \\ \hline 3.56 \end{array} \longrightarrow$ answer: -3.56

- Fractions/Mixed Numbers: Find a common denominator and then add or subtract. Borrow or convert an improper fraction answer, if necessary. Use integer rules to determine the sign of the answer.

ex: $5\frac{3}{4} - \left(-3\frac{7}{8}\right) \longrightarrow 5\frac{3}{4}\ \ 3\frac{7}{8} \longrightarrow$ pos + pos: add $\longrightarrow$ $\begin{array}{r} 5\frac{3}{4} = \frac{6}{8} \\ +\ 3\frac{7}{8} = \frac{7}{8} \\ \hline 8\ \ \frac{13}{8} \end{array} \longrightarrow$ answer: $9\frac{5}{8}$

Multiplying & Dividing Rational Numbers

Determine the sign of the answer using integer rules. Then multiply or divide.

- Multiplying Decimals: Ignore the decimal points. Multiply the numbers. Then count the decimal places in the problem to determine the location of the decimal point in the answer.

ex: $-9.23 \cdot (-1.1) \longrightarrow$ neg · neg = pos $\longrightarrow$ $\begin{array}{r} 9.23 \\ \times\ \ 1.1 \\ \hline 923 \\ 9230 \\ \hline 10153 \end{array} \longrightarrow$ answer: 10.153

- Dividing Decimals: Move the decimal in the divisor to the end of the number. Move the decimal in the dividend the same number of places and then bring it straight up in quotient.

ex: $-5.2 \div 0.2 \longrightarrow$ neg ÷ pos = neg $\longrightarrow$ $02.\overline{)\,52.}\ \ 26. \longrightarrow$ answer: -26

- Multiplying Fractions: Convert mixed numbers to improper fractions. Then cross-simplify. Multiply the numerators and multiply the denominators. Simplify if necessary.

ex: $-1\frac{3}{4} \cdot \frac{6}{14} \longrightarrow$ neg · pos = neg $\longrightarrow$ $\overset{1}{\cancel{7}} \cdot \frac{\overset{3}{\cancel{6}}}{\underset{2}{\cancel{14}}} = \frac{3}{4} \longrightarrow$ answer: $-\frac{3}{4}$

- Dividing Fractions: Convert mixed numbers to improper fractions. Then flip the second fraction to its reciprocal and multiply the two fractions. Simplify if necessary.

ex: $-\frac{1}{2} \div \left(-\frac{3}{8}\right) \longrightarrow$ neg ÷ neg = pos $\longrightarrow$ $\frac{1}{\cancel{2}} \cdot \frac{\overset{4}{\cancel{8}}}{3} = \frac{4}{3} \longrightarrow$ answer: $1\frac{1}{3}$

Find the sum, difference, product, or quotient.

33. $38.61 + 36.841$

34. $1.755 - 1.23$

35. $0.71 \cdot 9.2$

36. $13.12 \div 0.1$

37. $3.651 - (-12.63)$

38. $-3.9 + (-7.6)$

39. $17.6 \cdot 4.3$

40. $6 \cdot (-16.7)$

41. $26.474 - 14.527$

42. $-2.1 + 3.78$

43. $-6.15 \div (-8.2)$

44. $-12.8 \cdot (-4.88)$

Find the sum, difference, product, or quotient.

45. $15\ 1/2 + 15\ 1/4$

46. $18\ 11/20 - 17\ 1/2$

47. $2\ 1/4 \cdot 1\ 4/5$

48. $3\ 1/2 \div 1\ 3/7$

49. $3\ 1/3 - 5\ 1/9$

50. $5 \cdot (-1\ 2/5)$

51. $-4\ 2/3 + (-1\ 3/4)$

52. $-5/6 \div (-2\ 1/6)$

53. $9 \div (-4\ 1/2)$

54. $-18 + 3\ 4/5$

55. $-5\ 2/3 \cdot (-2\ 5/6)$

56. $-5\ 3/4 - (-3\ 7/8)$

Proportions and Percent

Solving Proportions

- Set cross-products equal to each other and then solve the one-step equation for the given variable.

ex: $\frac{5}{b}=\frac{4}{10}$ → $5 \cdot 10 = 4b$ → $\frac{50}{4}=\frac{4b}{4}$ → answer: $b = 12.5$

Solving Percent Problems with Proportions

- Set up and solve a proportion as follows: $\frac{\%}{100}=\frac{\text{part}}{\text{whole}}$

ex: 25 is what percent of 500? → $\frac{x}{100}=\frac{25}{500}$ → answer: $x = 5\%$

ex: What is 15% of 88? → $\frac{15}{100}=\frac{x}{88}$ → answer: $x = 13.2$

ex: 18 is 30% of what number? → $\frac{30}{100}=\frac{18}{x}$ → answer: $x = 60$

Solving Percent Problems with Equations

- Translate the question to an equation and then solve. (Be sure to convert percents to decimals or fractions.)

ex: 20 is 40% of what number? → $20 = 0.4x$ → answer: $x = 50$

ex: 8 is what percent of 32? → $8 = 32x$ → $x = 0.25$ → answer: 25%

ex: What is 25% of 88? → $x = 0.25 \cdot 88$ → answer: $x = 22$

Real-World Percent Problems

(This is just one way of many to solve real-world percent problems)

- Tax: Find the amount of tax using a proportion or equation. Then add the tax to the original amount to find the total cost.
- Discount: Find the amount of the discount using a proportion or equation. Then subtract the amount of discount from the original price to find the sale price.

Solve the proportion.

77. $\frac{h}{6} = \frac{20}{24}$

78. $\frac{5}{7} = \frac{c}{14}$

79. $\frac{6}{8} = \frac{21}{b}$

80. $\frac{30}{j} = \frac{26}{39}$

81. $\frac{5}{k} = \frac{15}{20}$

82. $\frac{32}{112} = \frac{a}{14}$

83. $\frac{16}{7} = \frac{18}{g}$

84. $\frac{w}{60} = \frac{15}{200}$

Solve the percent problem.

85. Find 15% of 85.

86. 6 is 75% of what number?

87. 40 is what percent of 320?

88. What is 20% of 45?

89. 70 is what percent of 350?

90. Find $33.\overline{3}$% of 81.

91. A $58 camera is on sale for 20% off. Find the sale price.

92. Find the total price of a $14.00 shirt including the 7% sales tax.

A

Correct: _____

Multiply.

1	3 x 0 =	23	9 x 5 =
2	4 x 0 =	24	9 x 4 =
3	8 x 0 =	25	3 x 10 =
4	9 x 0 =	26	3 x 9 =
5	3 x 1 =	27	3 x 8 =
6	4 x 1 =	28	4 x 10 =
7	8 x 1 =	29	4 x 9 =
8	9 x 1 =	30	4 x 8 =
9	3 x 2 =	31	9 x 10 =
10	3 x 3 =	32	9 x 9 =
11	4 x 2 =	33	9 x 8 =
12	4 x 3 =	34	8 x 10 =
13	9 x 2 =	35	8 x 9 =
14	9 x 3 =	36	8 x 8 =
15	8 x 2 =	37	3 x 6 =
16	8 x 3 =	38	4 x 7 =
17	4 x 5 =	39	8 x 6 =
18	4 x 4 =	40	9 x 7 =
19	3 x 5 =	41	3 x 7 =
20	3 x 4 =	42	4 x 6 =
21	8 x 5 =	43	8 x 7 =
22	8 x 4 =	44	9 x 6 =

Geometry

Geometry Basics

- Perimeter is the distance around a polygon
- Circumference is the distance around a circle
- Area is the space inside a figure
- Volume is the capacity of a 3-dimensional figure
- Surface Area is the sum of the areas of all the faces on a 3-dimensional figure

2-Dimensional Geometry Formulas

- Perimeter of Any Figure: sum of side lengths
- Circumference = $\pi \cdot$ diameter
- Area of Parallelogram = base $\cdot$ height
- Area of Triangle = $\frac{1}{2} \cdot$ base $\cdot$ height
- Area of Trapezoid = $\frac{1}{2} \cdot$ height$(\text{base}_1 + \text{base}_2)$
- Area of Circle = $\pi \cdot \text{radius}^2$

3-Dimensional Geometry Formulas

- Volume of Rectangular Prism = length $\cdot$ width $\cdot$ height
- Volume of Cylinder = $\pi \cdot \text{radius}^2 \cdot$ height
- Surface Area of Rectangular Prism = $2 \cdot$ length $\cdot$ width $+ 2 \cdot$ length $\cdot$ height $+ 2 \cdot$ height $\cdot$ width
- Surface Area of Cylinder = $2 \cdot \pi \cdot \text{radius}^2 + 2 \cdot \pi \cdot$ radius $\cdot$ height

Find the perimeter (or circumference) and area. Use 3.14 for pi.

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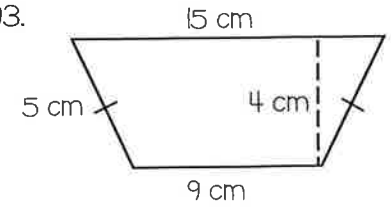

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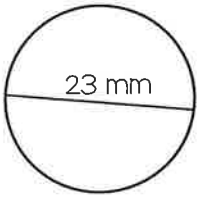

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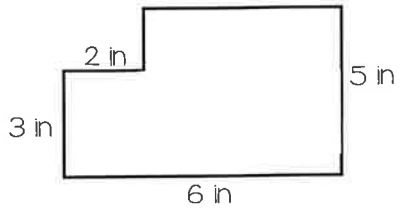

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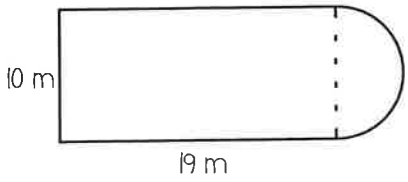

Find the surface area and volume.

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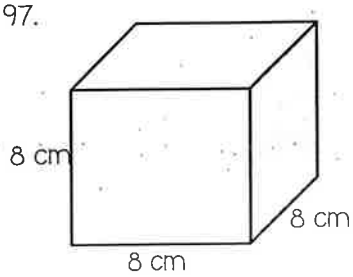

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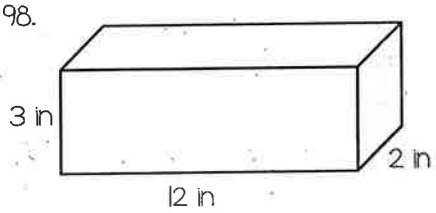

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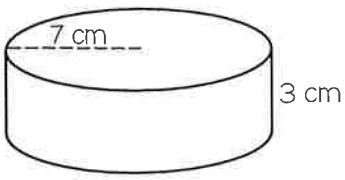

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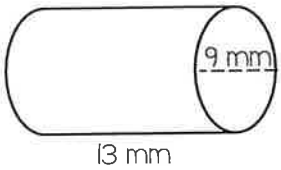


A

Correct: _____

Express the fraction as a whole number.

1	$\frac{2}{2} =$	23	$\frac{8}{8} =$
2	$\frac{4}{2} =$	24	$\frac{16}{8} =$
3	$\frac{6}{2} =$	25	$\frac{6}{6} =$
4	$\frac{10}{2} =$	26	$\frac{12}{6} =$
5	$\frac{8}{2} =$	27	$\frac{32}{8} =$
6	$\frac{5}{5} =$	28	$\frac{18}{6} =$
7	$\frac{10}{5} =$	29	$\frac{24}{8} =$
8	$\frac{15}{5} =$	30	$\frac{24}{6} =$
9	$\frac{25}{5} =$	31	$\frac{40}{8} =$
10	$\frac{20}{5} =$	32	$\frac{40}{5} =$
11	$\frac{4}{4} =$	33	$\frac{30}{6} =$
12	$\frac{8}{4} =$	34	$\frac{30}{5} =$
13	$\frac{12}{4} =$	35	$\frac{14}{2} =$
14	$\frac{20}{4} =$	36	$\frac{35}{5} =$
15	$\frac{3}{3} =$	37	$\frac{16}{2} =$
16	$\frac{6}{3} =$	38	$\frac{18}{3} =$
17	$\frac{9}{3} =$	39	$\frac{36}{6} =$
18	$\frac{15}{3} =$	40	$\frac{64}{8} =$
19	$\frac{20}{2} =$	41	$\frac{21}{3} =$
20	$\frac{16}{4} =$	42	$\frac{28}{4} =$
21	$\frac{50}{5} =$	43	$\frac{42}{6} =$
22	$\frac{12}{3} =$	44	$\frac{56}{8} =$

Section 4: Equations: Please show each step of solving the equations. Show which inverse operation you should use in each equation in order to arrive at your answer.

20.) $x - 5 = 20$	21.) $x + 10 = 36$	22.) $5x = 15$
23.) $\frac{x}{3} = 12$	24.) $3x - 6 = 18$	25.) $-6x + 5 = 35$
26.) $5(x - 2) = 45$	27.) $2x + 5 + 8x = 65$	28.) $\frac{1}{2}(6x - 4) = 10$
29.) $m + 5(m - 1) = 7$	30.) $2(3x - 4) + 4x = 18$	

31.) John paid Planet Burger Gym a $50 membership fee plus $10 per training session. His total for the month was $175. Which equation can be used to determine how many training sessions he took for the month?

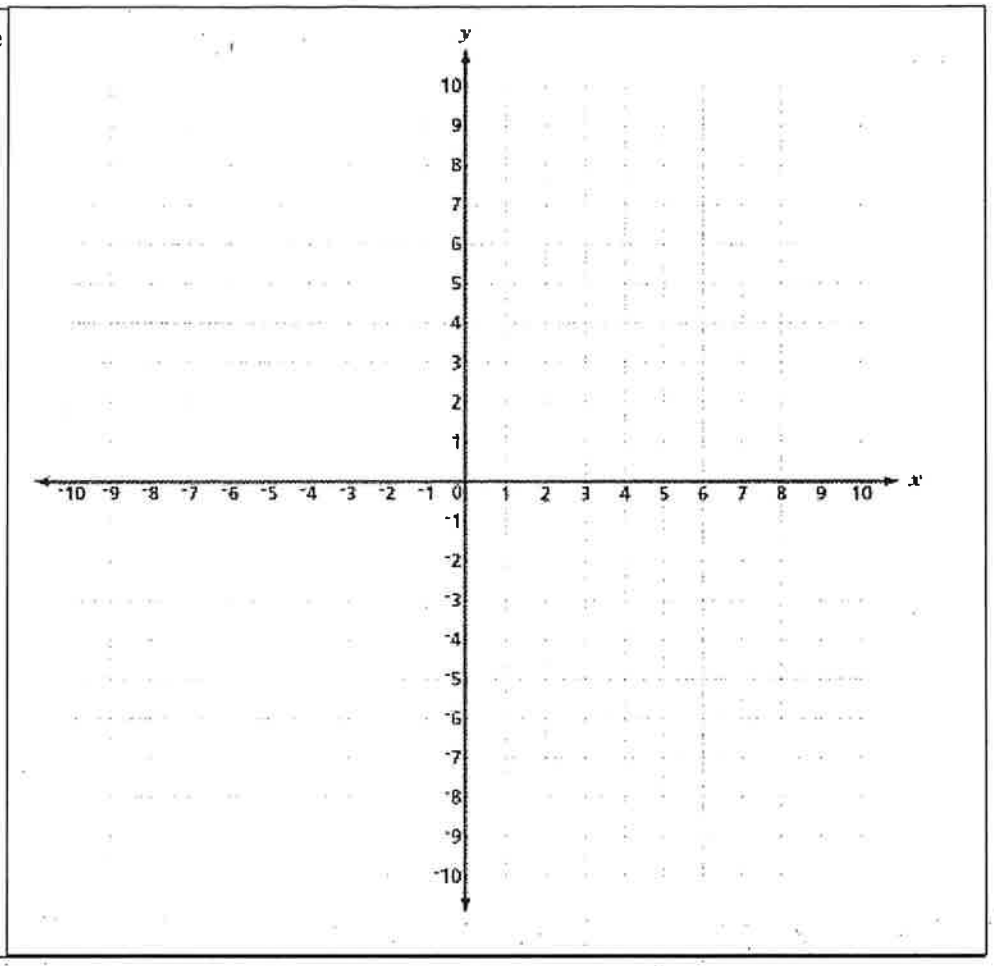
A $50x + 10 = 175$
B $50x + 10 = 175x$
C $50 + 10x = 175$
D $50 + 10x = 175x$

Section 5: Graphing

Plot the following points on the coordinate grid to the right.

A.) (-5, 4)
B.) (2,3)
C.) (0,6)
D.) (-5,0)
E.) (3,4)
F.) (-8,-7)

Do not connect the dots.



Order the numbers from least to greatest.

1. $|-3|, 4, -4, -|2|, -1$

2. $\frac{21}{2}, -7.5, -\frac{36}{5}, 9.5$

Simplify the expression.

3. $4 - (-3)$

4. $-2 + 15$

5. $-3(4)$

6. $27 \div (-3)$

7. $-\frac{1}{6} + \frac{7}{12}$

8. $0.24 - 1.6$

9. $2\frac{3}{5} \bullet \left(-\frac{4}{3}\right)$

10. $-24 \div 3.2$

11. On an exam you get two points for each question answered correctly, zero points for each question left blank, and lose one point for each question answered incorrectly. What is your total score on the exam if you answer 22 questions correctly, leave 7 questions blank, and answer 5 questions incorrectly?

Solve.

12. $x + 2\frac{4}{5} = 3\frac{1}{6}$

13. $-0.4a + 1.2 = 3.6$

A

Correct: _____

Solve for k.

1	2 ÷ 2 = k	k =	23	15 ÷ 3 = k	k =
2	4 ÷ 2 = k	k =	24	30 ÷ 3 = k	k =
3	6 ÷ 2 = k	k =	25	k = 10 ÷ 2	k =
4	8 ÷ 2 = k	k =	26	k = 25 ÷ 5	k =
5	20 ÷ 2 = k	k =	27	16 ÷ 4 = k	k =
6	k = 20 ÷ 10	k =	28	12 ÷ 3 = k	k =
7	5 ÷ 5 = k	k =	29	k = 14 ÷ 2	k =
8	10 ÷ 5 = k	k =	30	k = 18 ÷ 2	k =
9	15 ÷ 5 = k	k =	31	12 ÷ 2 = k	k =
10	20 ÷ 5 = k	k =	32	16 ÷ 2 = k	k =
11	50 ÷ 5 = k	k =	33	35 ÷ 5 = k	k =
12	k = 50 ÷ 10	k =	34	k = 18 ÷ 3	k =
13	4 ÷ 4 = k	k =	35	24 ÷ 3 = k	k =
14	8 ÷ 4 = k	k =	36	k = 45 ÷ 5	k =
15	12 ÷ 4 = k	k =	37	24 ÷ 4 = k	k =
16	20 ÷ 4 = k	k =	38	k = 32 ÷ 4	k =
17	40 ÷ 4 = k	k =	39	40 ÷ 5 = k	k =
18	k = 40 ÷ 10	k =	40	k = 21 ÷ 3	k =
19	30 ÷ 10 = k	k =	41	27 ÷ 3 = k	k =
20	3 ÷ 3 = k	k =	42	k = 30 ÷ 5	k =
21	6 ÷ 3 = k	k =	43	28 ÷ 4 = k	k =
22	9 ÷ 3 = k	k =	44	k = 36 ÷ 4	k =

14. A pencil costs $0.30 and a pen costs $0.50. You buy 10 pencils and the total cost is $7.50. How many pens did you buy?

15. A farmer builds a fence to enclose a rectangular pasture. He uses 160 feet of fence. Find the total area of the pasture if it is 50 feet long.

Write the word sentence as an inequality.

16. 3 less than a number t is at most 7.

17. A number m multiplied by 4 is greater than 12.

18. You and two friends are making a gift basket. You want to keep the cost below $15 per person. Write and solve an inequality that represents the total cost of the gift basket.

Solve the inequality. Graph the solution.

19. $a - 7 \leq -4$

20. $-3m < 15$

21. If you spend at least $50 (including shipping) at an online store, you receive a $10 gift card. You want to purchase CDs that cost $12 each. If shipping costs $5, write and solve an inequality to find the number of CDs you must buy to receive the gift card.

Minutes	1	3	5
Songs	2	6	10

22. The table shows the time in minutes m to download s songs. How long does it take to download one song?

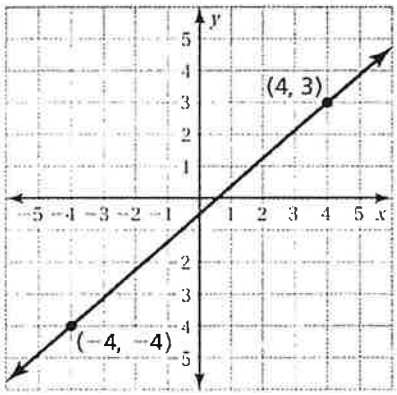
Tell whether the ratios form a proportion and prove how you know.

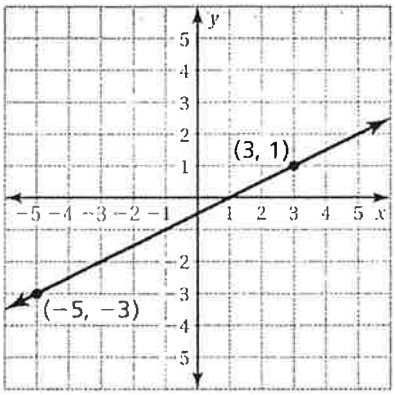
23. $\frac{3}{8}, \frac{13}{40}$

24. $\frac{7}{9}, \frac{28}{36}$

25. Solve the proportion $\frac{7}{5} = \frac{21}{x}$.

Find the slope of the line.





A

Write the answer as a decimal.

Correct: _____

1	$\frac{3}{10} =$	23	$\frac{1}{5} =$
2	$\frac{7}{10} =$	24	$4\frac{1}{5} =$
3	$\frac{9}{10} =$	25	$\frac{2}{5} =$
4	$\frac{5}{10} =$	26	$7\frac{2}{5} =$
5	$\frac{1}{2} =$	27	$\frac{4}{5} =$
6	$\frac{2}{10} =$	28	$6\frac{4}{5} =$
7	$\frac{1}{5} =$	29	$\frac{3}{5} =$
8	$\frac{4}{10} =$	30	$8\frac{3}{5} =$
9	$\frac{2}{5} =$	31	$6\frac{1}{2} =$
10	$\frac{6}{10} =$	32	$25\frac{2}{5} =$
11	$\frac{3}{5} =$	33	$36\frac{4}{5} =$
12	$\frac{8}{10} =$	34	$49\frac{1}{5} =$
13	$\frac{4}{5} =$	35	$52\frac{3}{5} =$
14	$\frac{1}{10} =$	36	$(12 \times 4) + \frac{1}{2} =$
15	$1\frac{1}{10} =$	37	$(13 \times 5) + \frac{2}{5} =$
16	$2\frac{1}{10} =$	38	$\frac{4}{5} + (14 \times 4) =$
17	$7\frac{1}{10} =$	39	$\frac{1}{5} + (15 \times 6) =$
18	$\frac{1}{2} =$	40	$(16 \times 5) + \frac{3}{5} =$
19	$1\frac{1}{2} =$	41	$(17 \times 5) + \frac{1}{2} =$
20	$2\frac{1}{2} =$	42	$\frac{2}{5} + (18 \times 9) =$
21	$9\frac{1}{2} =$	43	$(19 \times 7) + \frac{4}{5} =$
22	$6\frac{7}{10} =$	44	$\frac{3}{5} + (14 \times 14) =$

Reference Sheet

The sum of the measures of the interior angles of a triangle = 180°

Distance = rate × time

Simple Interest Formula: $A = p + prt$ Compound Interest Formula: $A = p(1+r)^t$

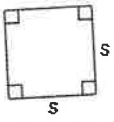
A = amount after t years; p = principal; r = annual interest rate; t = number of years

$\pi \approx 3.14$ or $\frac{22}{7}$

Square

Area = s^2

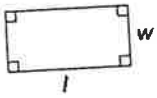
Perimeter = $4s$



Rectangle

Area = lw

Perimeter = $2l + 2w$



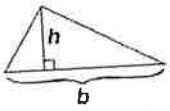
Circle

Area = πr^2

Circumference = $2\pi r$ = πd

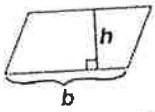
Triangle

Area = $\frac{1}{2}bh$



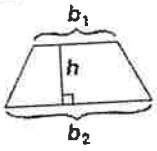
Parallelogram

Area = bh



Trapezoid

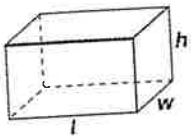
Area = $\frac{1}{2}h(b_1 + b_2)$



Rectangular Prism

Volume = lwh

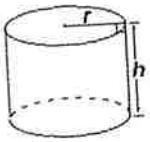
Surface Area = $2lw + 2wh + 2lh$



Cylinder

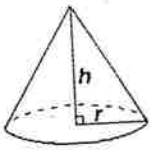
Volume = $\pi r^2 h$

Surface Area = $2\pi rh + 2\pi r^2$



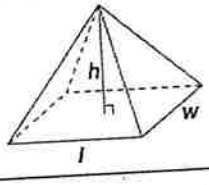
Cone

Volume = $\frac{1}{3}\pi r^2 h$



Pyramid

Volume = $\frac{1}{3}lwh$



USE THE FOLLOWING EQUIVALENTS FOR YOUR CALCULATIONS

60 seconds = 1 minute 60 minutes = 1 hour 24 hours = 1 day 7 days = 1 week 12 months = 1 year 365 days = 1 year	12 inches = 1 foot 3 feet = 1 yard 36 inches = 1 yard 5,280 feet = 1 mile 1,760 yards = 1 mile	10 millimeters = 1 centimeter 100 centimeters = 1 meter 10 decimeters = 1 meter 1000 meters = 1 kilometer
8 fluid ounces = 1 cup 2 cups = 1 pint 2 pints = 1 quart 4 quarts = 1 gallon 1000 milliliters (mL) = 1 liter (L)	16 ounces = 1 pound 2,000 pounds = 1 ton 1000 milligrams = 1 gram 100 centigrams = 1 gram 10 grams = 1 dekagram 1000 grams = 1 kilogram	

$$\text{Slope} = m = \frac{\text{Rise}}{\text{Run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

28. If 30% of a number is 15, what is the number?

29. A store sign reads "Take 75% off the original price when you take an additional 15% off the sale price, which is 60% off the original price." Is the store's sign accurate? Explain.

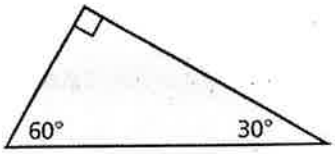
30. You put $1200 in an account that earns 3% simple interest. Find the total amount in the account after four years.

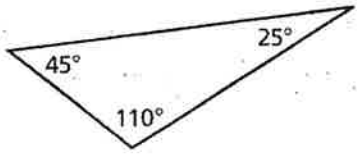
Classify the angles as *complementary*, *supplementary*, or *neither*.

31. 23°, 67°

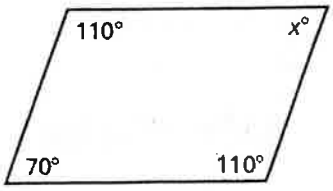
32. 46°, 144°

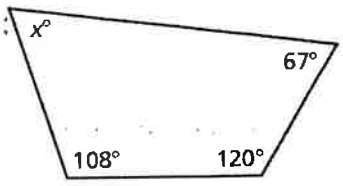
Classify the triangle and find the missing angle.





Classify the quadrilateral and find the value of *x*.





A

Correct: _____

Multiply.

1	5 x 0 =	23	5 x 6 =
2	8 x 0 =	24	5 x 7 =
3	9 x 0 =	25	9 x 5 =
4	5 x 1 =	26	9 x 6 =
5	8 x 1 =	27	9 x 7 =
6	9 x 1 =	28	8 x 5 =
7	5 x 1 =	29	8 x 6 =
8	5 x 2 =	30	8 x 7 =
9	5 x 3 =	31	5 x 10 =
10	8 x 1 =	32	5 x 9 =
11	8 x 2 =	33	5 x 8 =
12	8 x 3 =	34	8 x 10 =
13	9 x 1 =	35	8 x 9 =
14	9 x 2 =	36	8 x 8 =
15	9 x 3 =	37	9 x 10 =
16	5 x 5 =	38	9 x 9 =
17	5 x 4 =	39	9 x 8 =
18	8 x 5 =	40	5 x 8 =
19	8 x 4 =	41	8 x 9 =
20	9 x 5 =	42	9 x 7 =
21	9 x 4 =	43	8 x 8 =
22	5 x 5 =	44	9 x 9 =