

1. Find the unit rate. Round to the nearest hundredth if necessary:

150 people for 5 classes

30 people per class

2. Simplify

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

3. Convert:

20 miles/hour = ___ feet/hour
(1 mile = 5,280 feet)

105,600 feet/hour

4. Use a table to solve. Explain your reasoning:

A vine grows 7.5 feet every 5 days. Is the length of the vine on the last day proportional to the number of days of growth?

| | | | | |
|-------------|-----|----|------|----|
| Time (days) | 5 | 10 | 15 | 20 |
| Length (ft) | 7.5 | 15 | 22.5 | 30 |

Yes, the relationship is proportional. All of the ratios are the same when dividing length by days.

5. Determine whether the relationship between the two quantities shown in each table are proportional by graphing on the coordinate plane. Explain your reasoning.

| Cooling Water | |
|---------------|------------------|
| Time (min) | Temperature (°F) |
| 5 | 95 |
| 10 | 90 |
| 15 | 85 |

No, the relationship is not proportional because the graph does not go through the origin.

6. Solve the proportion:

$$\frac{x}{13} = \frac{18}{39}$$

$$x = 6$$

7. Find the constant rate of change for the table:

| | | | | |
|-----------|---|---|----|----|
| Time (hr) | 0 | 1 | 2 | 3 |
| Wage (\$) | 0 | 9 | 18 | 27 |

The constant rate of change is \$9 per hour.

9. Solve:

The money Shelley earns varies directly with the number of dogs she walks. How much does Shelley earn for each dog she walks?

| | | | | |
|----------|---|---|---|---|
| Dogs (x) | 1 | 2 | 3 | 4 |
| Pay (\$) | 2 | 4 | 6 | 8 |

Shelley makes \$2 for every dog that she walks.

11. Find the number. Round to the nearest tenth if necessary:

What number is 25% of 180?

45

8. Solve

The table shows the number of markers per box. Graph the data. Then find the slope of the line. Explain what the slope represents.

| | | | | |
|---------|---|----|----|----|
| Boxes | 1 | 2 | 3 | 4 |
| Markers | 8 | 16 | 24 | 32 |

The slope is 8. This means that every box has 8 markers.

10. Find the number by converting the percent into a fraction. Round to the nearest tenth if necessary:

54% of 85

45.9

12. Answer:

What is the percent equation?

part = whole \times percent

13. Find the percentage of change. Round to the nearest whole percent. State whether the percent of change is an *increase* or a *decrease*.

48 notebooks to 14 notebooks

70.8% decrease

14. Find the total cost to the nearest cent:

\$39 pizza order; 15% tip

\$44.85

15. Find the sale price to the nearest cent:

\$119.50 skateboard; 20% off; 7% tax

\$102.29

16. Find the sale price to the nearest cent:

\$119.50 skateboard; 20% off; 7% tax

\$102.29

17. Write an integer for the situation. Write its opposite and what it means:

2 feet below flood level

-2; 2
2 feet above flood level

18. Add:

$$-19 + 24 = 5$$

19. Subtract:

$$27 - (-8) = 35$$

20. Multiply:

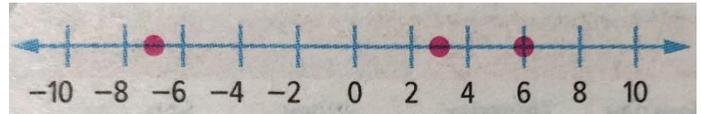
$$-9(-1)(-5) = -45$$

21. Divide:

$$32 \div (-8) = -4$$

22. Graph the set of integers on a number line:

$$\{3, -7, 6\}$$



23. Write an expression to describe the situation. Then solve:

Ronnie receives \$40 for his birthday. Then he spends \$15 at the movies. How much money does Ronnie have?

$$40 + (-15); \$25$$

24. Evaluate the expression if $f = -6$, $g = 7$, and $h = 9$:

$$f - 6 = -12$$

25. Divide. Write in simplest form.

$$-5\frac{2}{7} \div \left(-2\frac{1}{7}\right) = 2\frac{7}{15}$$

26. Evaluate the expression if $r = 12$, $s = -4$, and $t = -6$:

$$72 \div t = -12$$

27. Evaluate the expression if $d = 8$, $e = 3$, $f = 4$, and $g = -1$.

$$\frac{(5 + g)^2}{2} = 8$$

28. Order the set of numbers from least to greatest.

$$\left\{7.49, 7\frac{49}{50}, 7.5\%\right\}$$

$$7.5\%, 7.49, 7\frac{49}{50}$$

29. Write the next three terms in the sequence.

26, 34, 42, 50, ...

58, 66, 74

30. Subtract. Write in simplest form.

$$\frac{5}{6} - \left(-\frac{2}{3}\right) = \frac{3}{2} = 1\frac{1}{2}$$

31. Use the distributive property to evaluate the expression.

$$(3 + 8)(-8) = -88$$

32. Multiply. Write in simplest form.

$$\frac{3}{4} \cdot \frac{1}{8} = \frac{3}{32}$$

33. Identify the terms, like terms, coefficients, and constants in the expression.

$$4 + 5y - 6y + y$$

Terms: 4, 5y, -6y, y

Like Terms: 5y, -6y, & y

Coefficients: 5, -6, 1

Constant: 4

34. Add.

$$(-x + 10) + (-3x + 6)$$

$$-4x + 16$$

35. Subtract.

$$(-3x - 2) - (7x + 9)$$

$$-10x - 11$$

36. Find the unit rate. Round to the nearest hundredth if necessary:

815 calories in 4 servings

203.75 calories per serving

37. Simplify:

$$\frac{\frac{9}{10}}{9} = \frac{1}{10}$$

38. Convert:

$$16 \text{ centimeters/minute} = \underline{\hspace{1cm}} \text{ centimeters/hour}$$

960 centimeters per hour

39. Use a table to solve. Explain your reasoning:

To convert a temperature in degrees Celsius to degrees Fahrenheit, multiply the Celsius temperature by $\frac{9}{5}$ and then add 32. Is a temperature in degrees Celsius proportional to its equivalent temperature in degrees Fahrenheit?

| | | | | |
|--------------------|-----------|-----------|-----------|-----------|
| Degrees Celsius | 0 | 10 | 20 | 30 |
| Degrees Fahrenheit | 32 | 50 | 68 | 86 |

The relationship is not proportional when dividing Fahrenheit by Celsius the ratios are not the same.

40. Determine whether the relationship between the two quantities shown in each table are proportional by graphing on the coordinate plane. Explain your reasoning.

| Cooling Water | |
|---------------|------------------|
| Time (min) | Temperature (°F) |
| 5 | 95 |
| 10 | 90 |
| 15 | 85 |

The relationship is not proportional. It does not go through the origin.

41. Assume the situation is proportional. Write and solve by using a proportion.

For every person who has the flu, there are 6 people who have only flu-like symptoms. If a doctor sees 40 patients, determine approximately how many patients you would expect to have only flu-like symptoms.

$$40 = 6x$$

42. Find the constant rate of change for the table:

| | | | | |
|-----------|------|------|------|------|
| Minutes | 1000 | 2000 | 3000 | 4000 |
| Cost (\$) | 38 | 53 | 68 | 83 |

The constant rate of change is \$66.7 per minute.

43. Determine whether the linear relationship is a direct variation. If so, state the constant of variation.

| | | | | |
|-----------|----|----|----|----|
| Age (x) | 11 | 13 | 15 | 19 |
| Grade (y) | 5 | 7 | 9 | 11 |

This is not a direct variation.

44. Find the number by converting the percent into a decimal. Round to the nearest tenth if necessary:

98% of 15

14.7

45. Simplify:

\$3 is what percent of \$40?

7.5%

46. Write an equation for the problem, then solve. Round to the nearest tenth if necessary:

What percent of 96 is 26?

$\approx 27.1\%$

47. Find the percentage of change. Round to the nearest whole percent. State whether the percent of change is an *increase* or a *decrease*:

\$12 to \$6

50% decrease

48. Find the total cost to the nearest cent.

\$89.75 scooter; $7\frac{1}{4}\%$ tax

\$96.26

49. Evaluate the expression:

$$|-12| = \mathbf{12}$$

50. Add:

$$-4 + 12 + (-9) = \mathbf{-1}$$

51. Subtract:

$$-34 - (-20) = -14$$

52. Evaluate the expression if $a = -6$, $b = -4$, $c = 3$, and $d = 9$. Show your work on a separate sheet of paper:

$$-5c = -15$$

53. Solve:

Find the quotient of -65 and -13 .

5

54. Solve:

Jasmine's pet guinea pig gained 8 ounces in one month. Write an integer to describe the amount of weight her pet gained. Write the opposite and what it means.

8; -8

Her guinea pig lost 8 ounces in one month.

55. Write an expression to describe each situation. Then solve:

A quarterback is sacked for a loss of 5 yards. On the next play, his team loses 15 yards. Then the team gains 12 yards on the third play. What is the total yardage?

-8 yards lost

56. Evaluate the expression if $f = -6$, $g = 7$, and $h = 9$:

$$g - h = -2$$

57. Write an expression to represent the situation. Then solve:

Lily spends \$4 a day at a shop for the next 12 days. How much did Lily spend?

\$48

58. Divide:

$$-\frac{54}{6} = -9$$

59. Write the decimal as a fraction or mixed number in simplest form.

$$-0.34 = -\frac{17}{50}$$

60. Order the set of numbers from least to greatest.

$$\left\{-1.4, -1\frac{1}{25}, -1.25\right\}$$

$$-1.4, -1.25, -1\frac{1}{25}$$

61. Subtract. Write in simplest form.

$$\frac{15}{18} - \frac{13}{18} = \frac{1}{9}$$

62. Add. Write in simplest form.

$$-\frac{7}{8} + \frac{1}{3} = -\frac{13}{24}$$

63. Subtract. Write in simplest form.

$$4\frac{3}{10} - 1\frac{3}{4} = 2\frac{11}{20}$$

64. Multiply. Write in simplest form.

$$3\frac{1}{3} \cdot \left(-\frac{1}{5}\right) = -\frac{2}{3}$$

65. Divide. Write in simplest form.

$$\frac{5}{9} \div \frac{5}{6} = \frac{2}{3}$$

66. Evaluate the expression if $d = 8$,
 $e = 3$, $f = 4$, and $g = -1$.

$$8g - d = -16$$

67. Write the next three terms in the
sequence.

2.0, 3.1, 4.2, 5.3, ...

6.4, 7.5, 8.6

68. Use the distributive property to
rewrite the expression.

$$5(2b - 8) = 10b - 40$$

69. Identify the terms, like terms,
coefficients, and constants in the
expression.

$$-3d + 8 - d - 2$$

Terms: $-3d$, 8 , $-d$, and -2

Like Terms: $-3d$ & $-d$, 8 & -2

Coefficients: -3 , -1

Constants: 8 , -2

70. Add.

$$(-4x + 5) + (15x - 3) = 11x + 2$$

71. Subtract.

$$(4x + 10) - (-3x + 5) = 7x + 5$$

72. Factor the expression.

$$12xy + 30y = 6y(2x + 5)$$