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Rate of Change

1. Rick is traveling 48 mph in his car. After 3 hours, how far will he have traveled?

- **A.** 86 miles
- **B.** 93 miles
- **C.** 154 miles
- **D.** 144 miles

Number Sentences

2. Which value for *x* makes the sentence true?

$$x + 6 = 17$$

- **A.** 6
- **B.** 17
- **C.** 11
- **D.** 23

Ratios & Proportions

3. Solve for n: $\frac{7}{5} = \frac{n}{10}$

- **A.** n = 9
- **B.** n = 14
- **C.** n = 19
- **D.** n = 28

Fractions, Decimals & Percents

4. Convert to a decimal: $^1/_4$

- **A.** 0.1
- **B.** 0.25

- **C.** 0.75
- **D.** 0.5

Measurements

5. Compute the following.

23 minutes 55 seconds + 2 minutes 34 seconds = ?

- **A.** 26 minutes 55 seconds
- **B.** 26 minutes 24 seconds
- **C.** 25 minutes 29 seconds
- **D.** 26 minutes 29 seconds

Probability

6. Ana has 11 beads in a box. There are 3 blue beads, 3 red beads, and 5 yellow beads. What is the probability that she will choose *either* a blue bead or a red bead to put on her necklace?

- **A.** $^{1}/_{5}$
- **B.** $^{6}/_{11}$
- **C.** $^{11}/_{14}$
- **D.** $^{3}/_{11}$

Simplify the expression.

7. Simplify the following expression.

1.8 + 58.08

- **A.** 8.1
- **B.** 81
- **C.** 15.5
- **D.** 59.88

Patterns

8. What is the missing number in this sequence?

$^{1}/_{2}$, $^{1}/_{6}$, $^{1}/_{18}$, ___, $^{1}/_{162}$

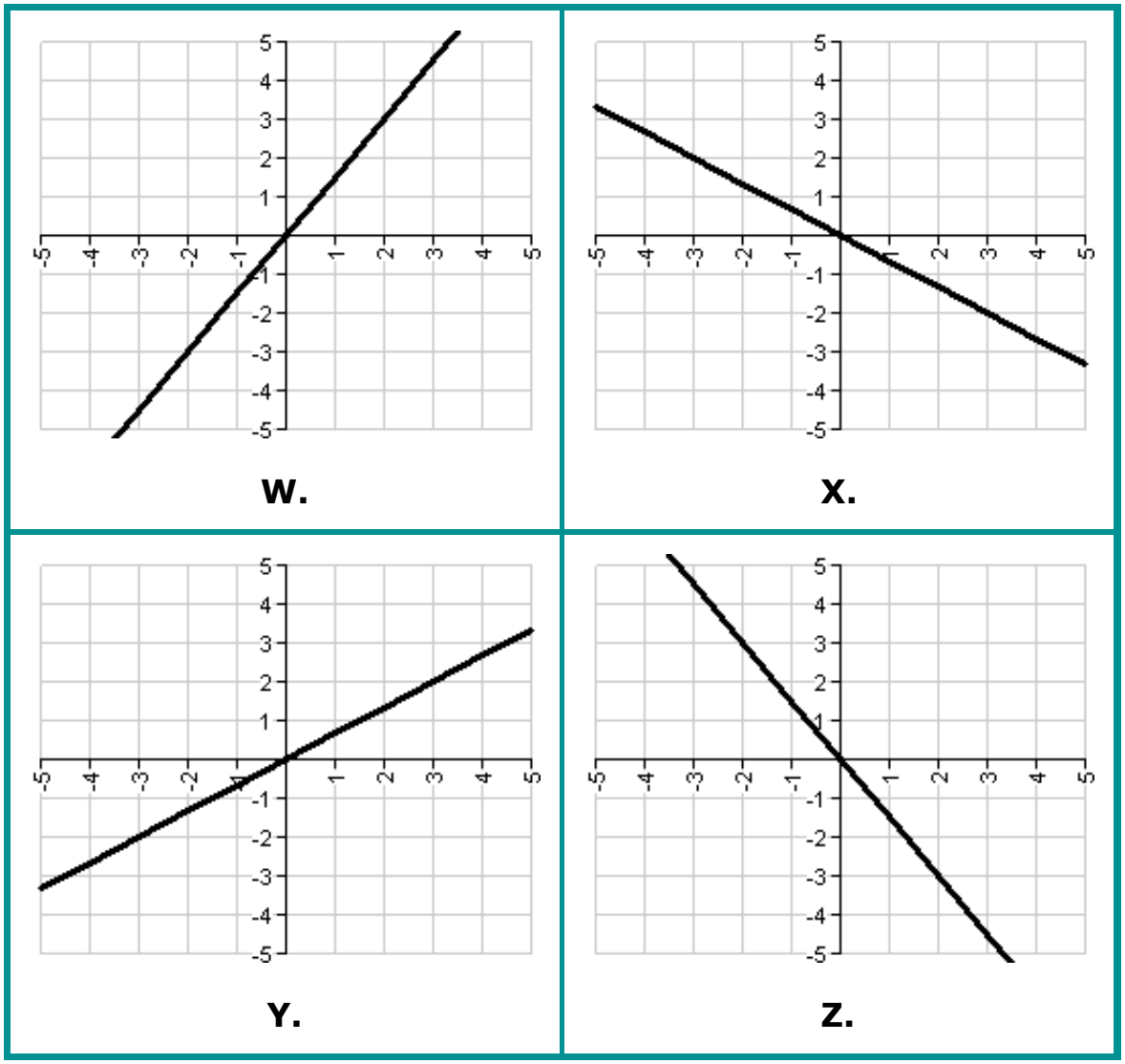
- **A.** $^{1}/_{162}$
- **B.** $^{54}/_{162}$

- **C.** $^{1}/_{54}$
- **D.** $^{1}/_{12}$

Rate of Change

9. Which of the following graphs matches the table below?

x	-2	-1	0	1	2
y	$-1\frac{1}{3}$	$-\frac{2}{3}$	0	$\frac{2}{3}$	$1\frac{1}{3}$



- **A.** Z
- **B.** Y

- **C.** W
- **D.** X

Number Sentences

10. Which value for x makes the sentence true?

$$11x = 99$$

- **A.** 9
- **B.** 88
- **C.** 18
- **D.** 20

Ratios & Proportions

11. Solve for n: $\frac{6}{48} = \frac{n}{112}$

- **A.** n = 17
- **B.** n = 14
- **C.** n = 16
- **D.** n = 13

Fractions, Decimals & Percents

12. Convert to a percent: 0.048

- **A.** 0.048%
- **B.** 48%
- **C.** 480%
- **D.** 4.8%

Measurements

13. Which of the following is equal to 57 ounces?

- **A.** 3 lb 7 oz
- **B.** 3 lb 9 oz
- **C.** 2 lb 7 oz
- **D.** 4 lb 9 oz

Probability

14. Andrew wants to experiment with probability. He tosses a fair coin 100 times and finds that he does not get heads exactly half of the time. What is the best reason why this might be the outcome of Andrew's experiment?

- **A.** because Andrew was not tossing the coin correctly
- **B.** because probability is theory, not fact; it is the chance that an event will occur
- **C.** because Andrew needs to toss more than one coin at a time
- **D.** because Andrew should have tossed the coin only 10 times

---

Simplify the expression.

15.
$$\begin{array}{r} 75 \\ \times\ 10 \\ \hline \end{array}$$

Patterns

16. What is the missing number in this sequence?

748.85 , 748.66 , 748.47 , ___ , 748.09

- **A.** 748.23
- **B.** 748.31
- **C.** 748.27
- **D.** 748.28

Rate of Change

17. When driving to the city, Aaron's average speed is 20 mph in heavy traffic, and his average speed is 60 mph in light traffic. Due to sudden storming weather, Aaron is in heavy traffic for 1 hour and light traffic for another 3 hours. How far does Aaron travel altogether?

- **A.** 240 miles
- **B.** 80 miles
- **C.** 38 miles
- **D.** 200 miles

Number Sentences

18. Which value for y makes the sentence true?

$$6 = y - 14$$

- **A.** 8
- **B.** 14
- **C.** 6
- **D.** 20

Ratios & Proportions

19. At the convenience store 8 pencils cost $1.92. How much does it cost to buy 75 pencils?

- **A.** $18.00
- **B.** $10.80
- **C.** $14.40
- **D.** $25.20

Fractions, Decimals & Percents

20. Convert to a decimal: $^{3}/_{25}$

- **A.** 0.12
- **B.** 0.012
- **C.** 0.0125
- **D.** 8.33

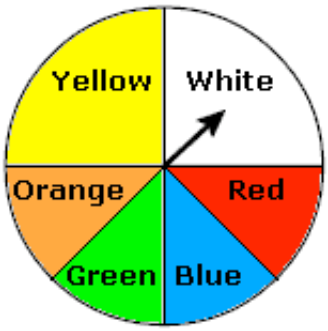
Measurements

21. Convert to liters: 16,000 mL

- **A.** 1,600 L
- **B.** 16 L
- **C.** 160 L
- **D.** 0.0016 L

Probability

22. A spinner was spun 16 times. The results are shown in the table below.



Spinner Results	
Yellow	4
White	3
Red	2
Blue	4
Green	1
Orange	2

Which colors' experimental probability matches its theoretical probability?

- **A.** Yellow, Blue, and Green
- **B.** Yellow, Red, and Orange
- **C.** White, Red, and Blue
- **D.** Yellow, Green, and Orange

Simplify the expression.

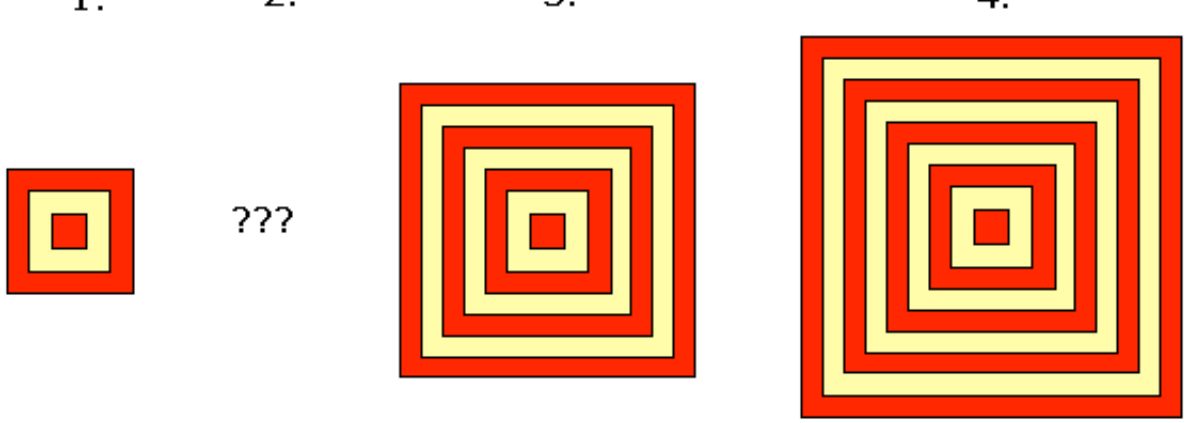
23. Simplify the following expression.

$$46.8 \div 5.2$$

- **A.** 8.5
- **B.** 9.7
- **C.** 9
- **D.** 11.1

Patterns

24.



In the pattern above, how many red sections will be in diagram **2**?

- **A.** 5
- **B.** 3

- **C.** 4
- **D.** 2

Rate of Change

25. Misty is on a long road trip, and she averages 70 mph for 3 hours while she's driving on the highway. When she's driving on side roads for 1 hour, she only averages 40 mph. What is the total distance that she covers on her road trip?

- **A.** 110 miles
- **B.** 82 miles
- **C.** 330 miles
- **D.** 250 miles

Number Sentences

26. Which value for x makes the sentence true?

$$x + 8 = 18$$

- **A.** 26
- **B.** 10
- **C.** 8
- **D.** 18

Ratios & Proportions

27. Larry makes sandwiches for lunch everyday. He can make 5 sandwiches with every 3 tomatoes he buys. If he bought 9 tomatoes, how many sandwiches could he make?

- **A.** 8
- **B.** 135
- **C.** 45
- **D.** 15

Fractions, Decimals & Percents

28. Convert to a percent: 0.47

- **A.** 4.7%
- **B.** 47%
- **C.** 470%
- **D.** 0.47%

Measurements

29. Compute the following.

17 kg - 9 kg 800 g = ?

- **A.** 9 kg 200 g
- **B.** 8 kg 200 g
- **C.** 7 kg 200 g
- **D.** 7 kg 800 g

Probability

30.

In an experiment a six sided die is rolled 12 times. The results are shown below.

Die Results	
# of Dots	Number of Times Landed On
1	2
2	1
3	0
4	3
5	2
6	4

Which numbers' experimental probability matches its theoretical probability?

- **A.** 4
- **B.** 2
- **C.** 1 and 5
- **D.** 3 and 6

Simplify the expression.

31. 646 ÷ 34

Patterns

32. What is the missing number in this sequence?

105.47 , 105.37 , 105.27 , ___ , 105.07

- **A.** 105.18
- **B.** 105.21
- **C.** 105.16
- **D.** 105.17

Rate of Change

33. Angela drove 420 miles in 7 hours at a constant rate of speed. At what rate of speed was she driving?

- **A.** 60 mph
- **B.** 70 mph
- **C.** 50 mph
- **D.** 65 mph

Number Sentences

34. Which value for *y* makes the sentence true?

$9 = y - 8$

- **A.** 9
- **B.** 17
- **C.** 8
- **D.** 1

Ratios & Proportions

35. Chase plays the piano and the cello. For every 2 hours he practices the piano, he practices the cello for 3 hours. If he practiced the piano for 7 hours last week, how many hours did he spend practicing the cello?

- **A.** 42
- **B.** 10.5
- **C.** 21
- **D.** 6

Fractions, Decimals & Percents

36. Convert to a decimal: 85%

- **A.** 8.5
- **B.** 85
- **C.** 0.85
- **D.** 0.085

Measurements

37. Compute the following.

2 c + 2 c 15 fl oz

- **A.** 6 c 7 fl oz
- **B.** 5 c 7 fl oz
- **C.** 5 c 13 fl oz
- **D.** 4 c 7 fl oz

Probability

38. Carla has 18 stickers of different colors. She figures that if she chooses a sticker without looking, her probability of getting a purple sticker is $^{14}/_{18}$. What is the probability of getting a sticker other than a purple sticker?

- **A.** $^{1}/_{14}$
- **B.** $^{2}/_{9}$
- **C.** $^{7}/_{9}$
- **D.** $^{5}/_{18}$

Simplify the expression.

39. 0.583 × 0.79

- **A.** 0.455
- **B.** 46.057
- **C.** 0.46057
- **D.** 0.04582

Patterns

40. What is the pattern for this sequence?

49 , 44 , 39 , 34 , 29 , …

- **A.** Each number in the sequence is 4 less than the previous number.

- **B.** The sequence decreases by multiples of 5: first by 5, then 10, then 15, then 20.
- **C.** Each number in the sequence is 5 less than the previous number.
- **D.** The sequence decreases by multiples of 6: first by 6, then 12, then 18, then 24.

Rate of Change

41. The slope of a line is the ratio of the

- **A.** x-intercept to the y-intercept.
- **B.** horizontal change to the vertical change between any two points on the line.
- **C.** y-intercept to the x-intercept.
- **D.** vertical change to the horizontal change between any two points on the line.

Number Sentences

42. Which value for x makes the sentence true?

$$11x = 55$$

- **A.** 44
- **B.** 16
- **C.** 5
- **D.** 10

Ratios & Proportions

43. Sandra bought 5 pounds of sweet potatoes for $7.55. What is the cost per pound of the sweet potatoes?

- **A.** $2.55
- **B.** $0.66
- **C.** $1.51
- **D.** $12.55

Fractions, Decimals & Percents

44. Convert to a fraction in simplest form:

$$30\%$$

- **A.** $^3/_5$
- **B.** $^3/_{25}$
- **C.** 6
- **D.** $^3/_{10}$

Measurements

45. Compute the following.

10 ft 11 in - 2 ft 10 in

- **A.** 8 ft 1 in
- **B.** 7 ft 1 in
- **C.** 10 ft 1 in
- **D.** 9 ft 1 in

Probability

46. Stacy is getting candy out of a grab bag at her school carnival. The probability that she will choose a chocolate bar is $^{4}/_{22}$. The probability that she will choose a piece of bubble gum is $^{7}/_{22}$. What is the probability that she will choose either a chocolate bar or a piece of gum?

- **A.** $1\ ^{7}/_{22}$
- **B.** $^{1}/_{2}$
- **C.** $^{7}/_{121}$
- **D.** $^{2}/_{11}$

Simplify the expression.

47.
$$\begin{array}{r} 318 \\ +\ 548 \\ \hline \end{array}$$

Patterns

48. What is the pattern for this sequence?

27 , 31 , 39 , 51 , 67 , ...

- **A.** The sequence increases by multiples of 4: first by 4, then 8, then 12, then 16.
- **B.** The sequence increases by multiples of 6: first by 6, then 12, then 18, then 24.
- **C.** Each number in the sequence is 4 more than the previous number.
- **D.** Each number in the sequence is 5 more than the previous number.

Rate of Change

49. The slope of a line is the ratio of the

- **A.** x-intercept to the y-intercept.
- **B.** change in y to the change in x between any two points on the line.
- **C.** y-intercept to the x-intercept.
- **D.** change in x to the change in y between any two points on the line.

Number Sentences

50. Which value for x makes the sentence true?

$$3x = 21$$

- **A.** 18
- **B.** 7
- **C.** 14
- **D.** 10

Answers

1. D
2. C
3. B
4. B
5. D
6. B
7. D
8. C
9. B
10. A
11. B
12. D
13. B
14. B
15. 750
16. D
17. D
18. D
19. A
20. A
21. B
22. B
23. C
24. B
25. D
26. B
27. D
28. B
29. C
30. C
31. 19
32. D
33. A
34. B
35. B
36. C
37. B

38. B
39. C
40. C
41. D
42. C
43. C
44. D
45. A
46. B
47. 866
48. A
49. B
50. B

Explanations

1. The rate (48 mph) and the time (3 hours) are provided. From these 2 numbers, you can calculate the distance ("how far") using the formula:

   distance = rate × time.

   distance = 48 mph × 3 hours = **144 miles.**

2. Use opposite operations to isolate *x*.

$$\begin{aligned} x + 6 &= 17 \\ x + 6 - 6 &= 17 - 6 \\ x &= \mathbf{11} \end{aligned}$$

3. Use the cross-multiplication technique.

$$\begin{aligned} 5n &= 70 \\ n &= 14 \end{aligned}$$

4. *To convert a fraction to a decimal, divide the numerator by the denominator.*

   1 ÷ 4 = 0.25

5. Add the minutes:

   23 minutes + 2 minutes = 25 minutes

   Next, add the seconds:

   55 seconds + 34 seconds = 89 seconds

   Because there are 60 seconds in a minute, 89 seconds need to be converted to minutes. Subtract 60 seconds from 89.

   89 seconds - 60 seconds = **29 seconds**

   Because you subtracted 60 seconds from 89 seconds, you need to add 1 minute to 25 minutes.

   25 minutes + 1 minute = **26 minutes**

   Therefore, the sum is **26 minutes 29 seconds**.

6. The probability of either of two events occurring is the sum of the two individual probabilities. So in this problem, add the probability of Ana choosing a blue bead to the probability of her choosing a

red bead.

$$^3/_{11} + {}^3/_{11} = \mathbf{^6/_{11}}$$

7. Make sure to line up the decimal points when adding decimals.

$$\begin{array}{r} 1.8 \\ +\ 58.08 \\ \hline \mathbf{59.88} \end{array}$$

8. The sequence increases by multiples of $^1/_3$.

   $^1/_2 \times {}^1/_3 = {}^1/_6$
   $^1/_6 \times {}^1/_3 = {}^1/_{18}$

   Therefore, the missing value is

   $$^1/_{18} \times {}^1/_3 = \mathbf{^1/_{54}}.$$

9. Use the table to find points on the line. The line contains the points $\left(-2\ ,\ -1\frac{1}{3}\right)$, $\left(-1\ ,\ -\frac{2}{3}\right)$, $(0\ ,\ 0)$, $\left(1\ ,\ \frac{2}{3}\right)$ and $\left(2\ ,\ 1\frac{1}{3}\right)$.

   The graph that contains these points is graph **Y**.

10. Use opposite operations to isolate *x*.

$$\begin{aligned} 11x &= 99 \\ 11x \div 11 &= 99 \div 11 \\ x &= \mathbf{9} \end{aligned}$$

11. Use the cross-multiplication technique.

$$\begin{aligned} 48n &= 672 \\ n &= 14 \end{aligned}$$

12. To convert to a percent, either multiply the number by 100, or just move the decimal two places to the right.

    $0.048 \times 100 = \mathbf{4.8\%}$

13. First, determine the number of whole pounds that can be formed from 57 ounces.

    There are 16 ounces in 1 pound, so there are 3 whole pounds in 57 ounces because $3\ \cancel{\text{lb}} \times \frac{16\ \text{oz}}{1\ \cancel{\text{lb}}} = 48\ \text{oz}$.

    Next, find the number of ounces left after 48 ounces are subtracted from 57 ounces.

$$57\ \text{oz} - 48\ \text{oz} = 9\ \text{oz}$$

Therefore, 57 ounces is equal to **3 pounds 9 ounces**.

14. Probability is theory. This means that probability is not fact but rather is the chance an event will occur. When a coin is tossed a certain number of times, it is not fact, but rather, it is likely the coin will land on heads half of the time according to theoretical probability.

15. When multiplying a number by a multiple of 10, just add the number of of zeros to the end of the number. In this case, add 1 zero to 75:

$$\begin{array}{r} 75 \\ \times\ 10 \\ \hline 750 \end{array}$$

Therefore, 10 × 75 = **750**.

16. Each number in the sequence decreases by nineteen hundredths (0.19) from the number before it.

748.85 - 0.19 = 748.66

748.66 - 0.19 = 748.47

Therefore, the missing value is **748.28** because:
748.47 - 0.19 = 748.28.

17. Aaron travels the heavy traffic distance plus the light traffic distance. To find the distance in heavy traffic and the distance in light traffice, use the formula,

distance = rate × time

The heavy traffic distance is:

20 mph × 1 hour = **20 miles.**

The light traffic distance is:

60 mph × 3 hours = **180 miles.**

So, Aaron travels:

20 miles + 180 miles = **200 miles.**

18. Use opposite operations to isolate *y*.

$$\begin{aligned} 6 &= y - 14 \\ 6 + 14 &= y - 14 + 14 \\ \mathbf{20} &= y \end{aligned}$$

19. First, set up the proportional relationship.

$$^{8}/_{\$1.92} = {}^{75}/_{x}$$

Now, solve for x.

$$8x = \$144.00$$
$$x = \mathbf{\$18.00}$$

20. *To convert a fraction to a decimal, divide the numerator by the denominator.*

    3 ÷ 25 = 0.12

21. Since there are 1,000 milliliters in 1 liter, divide 16,000 milliliters by 1,000 to convert to liters.

    16,000 mL ÷ 1,000 mL/L = **16 L**

22. Since the Yellow and White sections each cover $^{1}/_{4}$ of the spinner, theoretically the spinner should land on each of these colors $^{1}/_{4}$ of the time or 4 times.

    Since the Red, Blue, Green, and Orange sections cover $^{1}/_{8}$ of the spinner, theoretically the spinner should land on each of these colors $^{1}/_{8}$ of the time or 2 times.

    So, Yellow, Red, and Orange's experimental probability matches their theoretical probability.

23. For the divisor 5.2, move the decimal 1 place to the right to get rid of the decimal point. Do the same for the dividend.
    - 5.2 becomes 52
    - 46.8 becomes 468

    Now do the division as you normally would.

$$\begin{array}{r} 009 \\ 52\overline{)468} \\ \underline{468} \\ 000 \end{array}$$

    1. Divide 468 by 52 to get 9. Place 468 below 468.
    2. Subtract 468 from 468 to get 0.

24. The pattern should be consistent from diagram to diagram. Look at the difference between diagram 3 and diagram 4. Diagram 3 has **4** red sections and **3** yellow sections. Diagram 4 has **5** red sections and **4** yellow sections.

    Keeping with this pattern, diagram 2 would have **1 less** red section and **1 less** yellow section than diagram 3. Thus, diagram 2 will have **3 red** sections and **2 yellow** sections.

25. The total distance that Misty covers on her road trip will be the sum of highway distance and side road distance. Calculate the distance ("how many miles"), using the formula:

distance = rate × time

Her open highway distance is:

70 mph × 3 hours = **210 miles.**

Her side road distance is:

40 mph × 1 hour = **40 miles.**

So, the total distance that Misty covers on her road trip is:

210 miles + 40 miles = **250 miles.**

26. Use opposite operations to isolate *x*.

$$\begin{aligned} x + 8 &= 18 \\ x + 8 - 8 &= 18 - 8 \\ x &= \mathbf{10} \end{aligned}$$

27. Set up a proportion and solve.

$$\frac{5 \text{ sandwiches}}{3 \text{ tomatoes}} = \frac{x \text{ sandwiches}}{9 \text{ tomatoes}}$$

$$5 \times 9 = 3 \times x$$

$$\frac{45}{3} = x$$

$$15 = x$$

Therefore, Larry could make **15** sandwiches with 9 tomatoes.

28. To convert to a percent, either multiply the number by 100, or just move the decimal two places to the right.

0.47 × 100 = **47%**

29. Look at the grams first. 800 g cannot be subtracted from 0 g, so borrow 1,000 grams from 17 kg (because there are 1,000 grams in 1 kg).

Now, subtract 800 grams from 1,000 grams.

1,000 grams - 800 grams = **200 grams**

Because 1,000 grams were borrowed from 17 kg, make sure to take 1 kg away from 17. Now, subtract 9 kg from 16 kg.

16 kg - 9 kg = **7 kg**

Therefore, the difference is **7 kg 200 g**

30. Since each of the six sides of the die has an equal chance of turning up on each roll, theoretically the die should land on each number $^1/_6$ of the time or 2 times.

    So, for the numbers 1 and 5, the experimental probability matches their theoretical probability.

31.
$$\begin{array}{r} 19 \\ 34\overline{)646} \\ \underline{34} \\ 306 \\ \underline{306} \\ 0 \end{array}$$

1. Divide 64 by 34 to get 1 plus a remainder. Place 34 below 64.
2. Subtract 34 from 64 to get 30. Bring the 6 down from 646.
3. Divide 306 by 34 to get 9. Place 306 below 306.
4. Subtract 306 from 306 to get 0.

32. Each number in the sequence decreases by ten hundredths (0.10) from the number before it.

    105.47 - 0.10 = 105.37

    105.37 - 0.10 = 105.27

    Therefore, the missing value is **105.17** because:
    105.27 - 0.10 = 105.17.

33. The total miles driven can be modeled by the function y = kx, where x is the number of hours driven, y is the total miles, and k is miles per hour. By substituting x = 7 and y = 420 into y = kx, we get

$$420 \text{ miles} = (k)(7 \text{ hours})$$
$$\frac{420 \text{ miles}}{7 \text{ hours}} = k$$
$$\textbf{60 mph} = k$$

34. Use opposite operations to isolate *y*.

$$9 = y - 8$$
$$9 + 8 = y - 8 + 8$$
$$\textbf{17} = y$$

35. Set up a proportion and solve.

$$\frac{2 \text{ hours of piano}}{3 \text{ hours of cello}} = \frac{7 \text{ hours of piano}}{x \text{ hours of cello}}$$

$$2 \times x = 3 \times 7$$

$$x = \frac{21}{2}$$

$$x = 10.5$$

Therefore, Chase practiced the cello for **10.5** hours.

36. To convert a percentage to a decimal, place the percentage (without the % sign) over 100 and perform the division.

    85% = $^{85}/_{100}$ = **0.85**

37. First, add the cups and fluid ounces separately.

$$\begin{aligned} 2 \text{ c} + 2 \text{ c } 15 \text{ fl oz} &= (2 \text{ c} + 2 \text{ c}) + (15 \text{ fl oz}) \\ &= 4 \text{ c } 15 \text{ fl oz} \end{aligned}$$

    Next, since 8 fluid ounces equal 1 cup, convert 8 fluid ounces to 1 cup by subtracting 8 fluid ounces from 15 fluid ounces and adding 1 cup to 4 cups.

$$\begin{aligned} 4 \text{ c } 15 \text{ fl oz} &= (4 \text{ c} + 1 \text{ c}) + (15 \text{ fl oz} - 8 \text{ fl oz}) \\ &= \mathbf{5 \text{ c } 7 \text{ fl oz}} \end{aligned}$$

38. Fourteen of the 18 stickers are purple, then the probability of getting a purple sticker is $^{14}/_{18}$. Carla draws 1 time.

    If *P* is the probability of an event, *1-P* is the probability of an event **not** occurring.

    So in this case, the probability of picking a sticker that is not purple is 1 - $^{14}/_{18}$ = $\mathbf{^{2}/_{9}}$.

39. To multiply decimals, first rewrite the problem, *ignoring the decimal points:*
    583 × 79

    Now, solve:

	583
	× 79
multiply 583 × 9:	5,247
multiply 583 × 70:	40,810
add the results together:	**46,057**

    Finally, move the decimal point of the solution to the *left* to equal the total number of decimal places in the original factors.

In this case, 0.583 has 3 decimal places, and 0.79 has 2 decimal places, for a total of 5 decimal places.

Move the decimal point of the solution 5 places to the left.

This gives us **0.46057** for our final solution.

40. Each number in the sequence is less than the number before it. The key is figuring out *how much* less.

    The numbers decrease by **5** each time because:

    49 - **5** = 44
    44 - **5** = 39
    39 - **5** = 34
    34 - **5** = 29

    So, this means that **each number in the sequence is 5 less than the previous number**.

41. For any two points on a line, P(x_1, y_1) and Q(x_2, y_2), the slope m is given by the following equation.

$$m = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{y_2 - y_1}{x_2 - x_1}$$

    Therefore, the slope of a line is the ratio of the **vertical change to the horizontal change between any two points on the line**.

42. Use opposite operations to isolate x.

$$\begin{aligned} 11x &= 55 \\ 11x \div 11 &= 55 \div 11 \\ x &= \mathbf{5} \end{aligned}$$

43. The question asks for the cost per pound.

    The cost per pound is the unit price, or unit cost.

    To determine the unit price, divide the cost by the quantity.

$$\$7.55 \div 5 = \mathbf{\$1.51}$$

44. To convert a percentage to a fraction, place the percentage (without the % sign) over 100 and simplify.

$$30\% = {}^{30}/_{100} = {}^{\mathbf{3}}/_{\mathbf{10}}$$

45. Subtract the feet and inches separately.

10 ft 11 in - 2 ft 10 in = (10 ft - 2 ft) + (11 in - 10 in)
= **8 ft 1 in**

46. The probability of either of two events occurring is the sum of the two individual probabilities. So in this problem, add the probability of Stacy choosing a chocolate bar to the probability of her choosing a piece of bubble gum.

$$^{7}/_{22} + {}^{4}/_{22} = {}^{\mathbf{1}}/_{\mathbf{2}}$$

47. Add the digits in the ones place. 8 + 8 = 16. Place the 1 above the next column, and place the 6 below:

```
  18
 548
+318
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 866
```

Now, add the next column to the left. 1 + 4 + 1 = 6. Place the 6 below:

```
  18
 548
+318
----
 866
```

Now, add the next column to the left. 5 + 3 = 8. Place the 8 below:

```
 548
+318
----
 866
```

Therefore, 548 + 318 = **866**.

48. To determine the rule of this sequence, find the difference between consecutive numbers.

27 + **4** = 31
31 + **8** = 39
39 + **12** = 51
51 + **16** = 67

In this sequence, the numbers increase by multiples of **4** (4, 8, 12, 16).

49. For any two points on a line, P(x_1, y_1) and Q(x_2, y_2), the slope m is given by the following equation.

$$m = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Therefore, the slope of a line is the ratio of the **change in *y* to the change in *x* between any two points on the line**.

50. Use opposite operations to isolate x.

$$\begin{aligned} 3x &= 21 \\ 3x \div 3 &= 21 \div 3 \\ x &= \mathbf{7} \end{aligned}$$