

# RISE Placement Test Practice Test

Math Tiers 1, 2

## Overview

There are three RISE math placement tests. Students must earn a 70% on each test to advance to the next. That is, if students earn a 70% or higher on Test 1, then they can take Test 2.

Each test takes approximately 60 minutes to complete.

See the lists below of the content areas for each of the tests.

### Tier 1/Test 1

- Whole Numbers
- Fractions and Mixed Numbers
- Decimals
- Ratios, Rates and Proportions
- Percents
- Measurement
- Geometry
- Real Numbers

### Tier 2/Test 2

- Solving Equations and Inequalities
- Graphing
- Exponents and Polynomials
- Concepts in Statistics

The following pages contain sample test questions and an answer key organized by tier. Students should use the RISE Placement Test Formula Chart (<https://d3u9cqpepihmqm.cloudfront.net/wp-content/uploads/2024/02/27124722/RISE-placement-test-formula-chart-2.pdf>) during the practice test and real test experiences.

# Tier 1 Practice Test Questions

## Whole Numbers

1. A scientist invents a car that can travel for many hours without stopping for fuel. The car travels around a track at 54 miles an hour for 24 hours. At the end of the 24 hours, how far has the car traveled?
  - a. 78 miles
  - b. 1,286 miles
  - c. 1,080 miles
  - d. 1,296 miles
2. Constance wants brand new carpet for her square shaped bedroom. Her bedroom is 11 ft. by 11 ft. How much carpeting will Constance need to purchase to cover half of the floor?
  - a. 121 sq. ft.
  - b. 60.5 sq. ft.
  - c. 120 sq. ft.
  - d. 65 sq. ft.

## Fractions

3. A statue  $8\frac{3}{5}$  in. high rests on a stand that is  $1\frac{6}{10}$  in. high. What is the total height of statue with the stand? Simplify your answer.
  - a.  $10\frac{2}{10}$
  - b.  $7\frac{1}{5}$
  - c.  $9\frac{12}{10}$
  - d.  $10\frac{1}{5}$
4. A piece of ribbon is  $1\frac{7}{8}$  feet long. If the ribbon is going to be divided into 15 pieces, how long will each piece be?
  - a.  $1/8$
  - b. 8
  - c.  $28\frac{1}{8}$
  - d.  $13\frac{1}{8}$

(Test continued on next page)

## Decimals

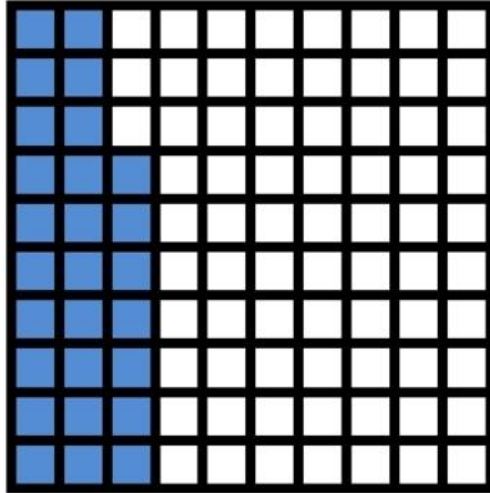


Figure 3

5. In figure 3, above, each square represents  $1/100$  of an inch. As a decimal, which one of the following is true?
- Since each square represents  $1/100$  of an inch, then the figure is representing 0.2 as an equivalent decimal.
  - Since each square represents  $1/100$  of an inch, then the figure is representing 0.27 as an equivalent decimal.
  - Since each square represents  $1/100$  of an inch, then the figure is representing 0.25 as an equivalent decimal.
  - Since each square represents  $1/100$  of an inch, then the figure is representing 0.23 as an equivalent decimal.

(Test continued on next page)

## Ratios, Rates and Proportions

6. Tim can decorate 3 T-shirts in 20 minutes. How many T-shirts can he decorate in 180 minutes?
- $\frac{1}{3}$
  - 27
  - 60
  - 1200
7. The following prices for pecans are all in proportion except,
- \$2 per oz equals \$6 per 3 oz.
  - \$4 per 2 oz equals \$20 per 10 oz.
  - \$9 per 4.5 oz equals \$36 per 18 oz.
  - \$13 per 6 oz equals \$29 per 12 oz.

## Percent

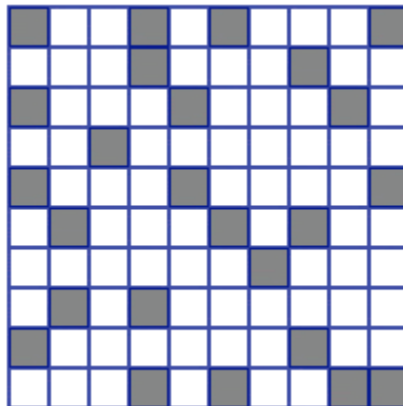


Figure 4

8. In the figure 4 above, what is the percent of unshaded blocks?
- 60%
  - 65%
  - 70%
  - 75%
9. What is the discount price for a pair of shoes that cost \$ 75.00, if the discount is 25%?
- \$55.00
  - \$56.25
  - \$57.50
  - \$58.00

(Test continued on next page)

10. To find the original price, use the formula, Percent x Base = Amount.

What is the original cost of the sofa, if the percent off discount is 40% and the discount amount is \$165.00?

- a. \$412.50
- b. \$413.36
- c. \$414.45
- d. \$417.18

## Measurements

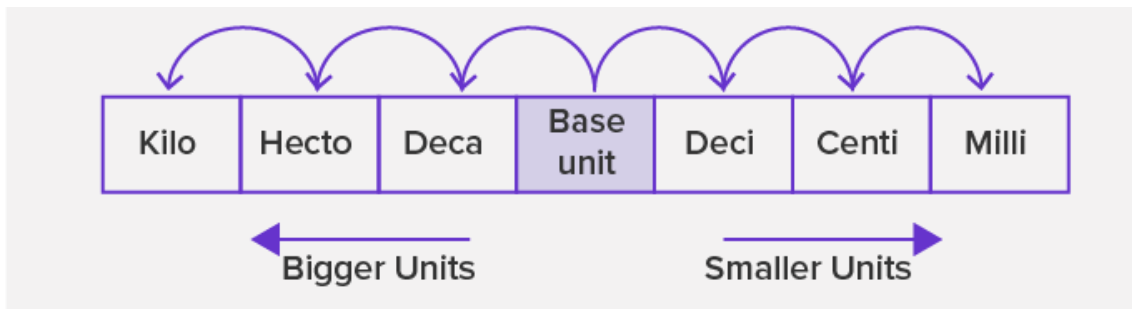


Figure 5

11. In figure 5 above, it is showing the metric system. If the base units are meters, convert 87,000 mm to Km.

- a. 0.87 Km
- b. 0.0087 Km
- c. 0.087 Km
- d. 0.00087 Km

12. In figure 5 above, it is showing the metric system. Laurence purchased a 200ml bottle of juice and purchased a second 3-liter bottle of juice. What is the difference in liters between the two juice bottle amounts?

- a. 2.08 L
- b. 2.008 L
- c. 2.8 L
- d. 28 L

(Test continued on next page)



Figure 6

13. The figure 6 above shows a digital scale and the weight of Ms. Roberson's grandson, Romiin, in kg. How many pounds is Romiin? (Round to the nearest whole number)
- a. 125 lbs.
  - b. 126 lbs.
  - c. 127 lbs.
  - d. 128 lbs.

## Geometry



Figure 6

14. The circumference of a circle is given by the formula,  $C = \pi d$ . The radius of the tire of a Lexus is 17 inches. Find the circumference of the tire using 3.14 for  $\pi$ . Round your final answer to the nearest whole number.
- a. 104 inches
  - b. 105 inches
  - c. 106 inches
  - d. 107 inches

(Test continued on next page)

15. Given the right triangle below in figure 7, If  $a = 3$  and  $c = 5$ , find  $b$ , the missing side.

- a. 1
- b. 2
- c. 4
- d. 6

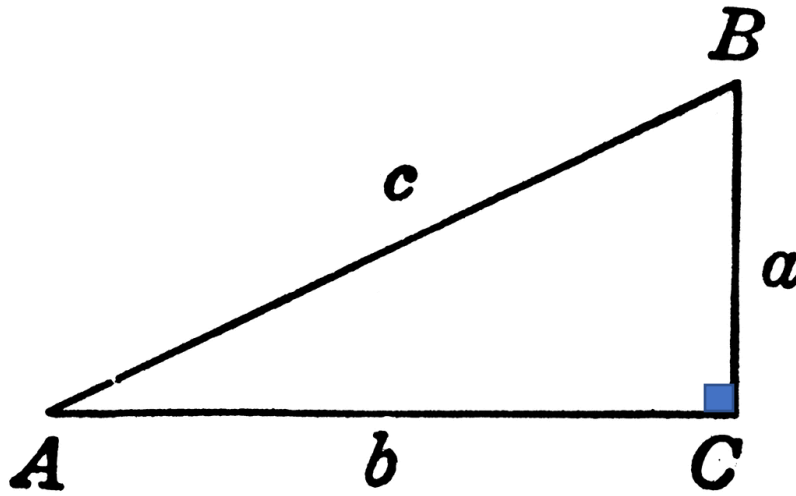


Figure 7

16. What is the positive root for  $\sqrt{169}$ ?

- a. -13
- b. -12
- c. 13
- d. 12

(Test continued on next page)

17. For the figure 8 below, find the perimeter of the polygon.

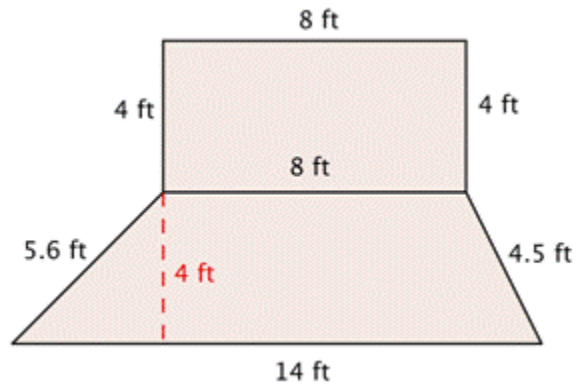


Figure 8

- a. 44.0 ft
- b. 42.3 ft
- c. 40.1 ft
- d. 4102 ft

### Real Numbers

18. Simplify the expression.  $\frac{(2+2^3)^2}{5}$

- a. 4
- b. 13.2
- c. 20
- d. 819.2

19. Simplify.  $\sqrt{36} + |-50| - (-70 + 35)$ .

- a. 88
- b. 89
- c. 90
- d. 91

20. Translate and evaluate the expression, x divided by 4 plus 9, if  $x = 4$ .

- a. 11
- b. 10
- c. 9
- d. 8

(Test continued on next page)



21. Simplify the expression.  $4^2 - 5^2$ .

- a. -9
- b. 9
- c. 10
- d. -10

22. Simplify the expression.  $\left(\frac{15}{6} - \frac{9}{6}\right) - \frac{8}{9}$ .

- a.  $\frac{1}{9}$
- b.  $\frac{7}{9}$
- c.  $-\frac{8}{9}$
- d.  $-\frac{2}{6}$

23. Write  $-6^3$  in expanded notation and evaluate.

- a. 216
- b. 18
- c. -216
- d. -18

(End of Tier 1 test)

# Tier 1 Answers and Explanations

## Whole Numbers and Fractions

1. ANSWER: **d**

This problem uses the basic principle of multiplication. The car travels 54 miles in one hour. To find the distance traveled in 24 hours multiply  $54 \times 24$ .  $54 \times 24 = 1,296$  miles.

2. ANSWER: **b**

This problem uses the formula for the area of a rectangle,  $A = l \times w$ . In this case, the shape of the room is a square. So, the formula is modified, and the area of a square is  $A = s \times s$ . To cover only half of the floor divide by 2.  $A = 11 \times 11 = 121/2 = 60.5$  sq. ft.

3. ANSWER: **d**

This problem uses the Least Common Denominator (LCD). To find the height of the statue with the stand, add the  $8 \frac{3}{5} + 1 \frac{6}{10}$  by first finding the LCD.  $8 \frac{6}{10} + 1 \frac{6}{10} = 9 \frac{12}{10}$ .  $12/10$  needs to be written as a mixed number,  $1 \frac{1}{10}$  and added to 9 to get  $10 \frac{1}{10}$ .

4. ANSWER: **a**

This problem uses the division of fractions. The piece of ribbon is to be divided into 15 pieces, so,  $1 \frac{7}{8}$  divided by 15. Turn  $1 \frac{7}{8}$  into an improper fraction,  $15/8$ . Then  $15/8$  can be multiplied by the reciprocal of 15, which is  $1/15$ . So,  $15/8 \times 1/15 = 1/8$ .

## Decimals

5. ANSWER: **b**

Since each square is  $1/100$ . Counting squares that are blue, there are 27. So, we can write this as a fraction,  $27/100$ .  $27/100$  can be written as 27 hundredths. Then writing as an equivalent decimal, 0.27.

## Ratios, Rates and Proportions

6. ANSWER: **b**

There are two ratios. First, 3 T-shirts : 20 minutes and second, unknown number of T-shirts (T) : 180 minutes. Using proportions, and setting the two ratios equal to each other, it follows,

$$\frac{3}{20} = \frac{T}{180}$$

By cross multiplying,  $20 \times T = 3 \times 180$ . Multiplying both sides give,  $20T = 540$ . Solving for T, by dividing both sides by 20, gives,  $T = 27$ . So, 27 T-shirts will be decorated in 180 minutes.

7. ANSWER: **d**

To see if two ratios are in proportion, first make sure we are working with the same units, dollars to ounces. Then we set the two ratios equal to each other. Take the cross products of the numerator to denominator which must equal. This show equal proportions. The multiple-choice answers that are in proportion are a, b, and c. d is not in proportion because,  $13 \times 12 = 6 \times 29$  does not equal the same number. Therefore, the prices are not in proportion of each other.

## Percent

8. ANSWER: **d**

By simply counting the unshaded blocks, there are 75 out of 100 blocks, unshaded. This represents 75% unshaded blocks.

9. ANSWER: **b**

To find the discount price, you first multiply the discount rate x the original price. So, multiply,  $(\$75.00 \times .25 = \$18.75)$ , remember to change your percent to a decimal by dividing by 100. Therefore, by subtracting  $\$18.75$  from the original price of,  $\$75.00$ , equals the discount price of  $\$56.25$ .

10. ANSWER: **a**

Following the formula  $0.40 \times S = \$165.00$ , where S is the unknown original price, solve for S by dividing by 0.40 on both sides. This gives the original price of  $\$412.50$ .

## Measurements

11. ANSWER: **c**

Start counting from the decimal point in the smaller unit, 87,000 mm and move 6 spaces to the left until you get to Km. Now move the decimal, in the number 87,000, 6 places to the left also. Since this is a whole number, the decimal is behind the last zero in 87.000 mm. The conversion is equal to 0.087Km.

12. ANSWER: **c**

The two bottles must be in the same metric units. Convert 200ml to liters. Using Figure 5 above, this gives 0.2 L. Therefore, to find the difference, subtract, 0.2 from 3 and get, 2.8 L.

13. ANSWER: **a**

Converting 56.8Kg to pounds, multiplying by 2.2, (1 kg = 2.2 pounds), therefore, Romiin weighs 124.96 pounds. Rounding to the nearest whole number, the answer is 125 lbs.

## Geometry

14. ANSWER: **d**

The diameter of the tire is 2 times the radius, which would be 34 inches. Using the formula above,  $C = 3.14 \times 34$  results in 106.76 in. Rounding 106.76 to the nearest whole number gives 107. So, the circumference of the Lexus tire is 107 inches.

15. ANSWER: **c**

To find the missing side, b, use the Pythagorean theorem formula,  $a^2 + b^2 = c^2$  Replace a and c in the formula, with their respective values. Therefore,

$$a^2 + b^2 = c^2$$

$$3^2 + b^2 = 5^2$$

$$9 + b^2 = 25$$

subtract 9 from both sides,

$$b^2 = 25 - 9$$

$$b^2 = 16, \text{ take the square root of both sides,}$$

$$b = 4 \text{ or } -4, \text{ but since length cannot be negative, } b = 4$$

16. ANSWER: **c**

Take the square root of 169, so  $\sqrt{169} = \pm 13$ . So, the positive root is +13.

17. ANSWER: **c**

To find the perimeter of the polygon, add all sides around the shape.

$$P = 4 + 8 + 4 + 4.5 + 14 + 5.6 = 40.1.$$

## Real Numbers

18. ANSWER: **c**

Following order of operation, PEMDAS,  $\frac{(2+2^3)^2}{5} =$

$$2^3 = 8$$

$$(2 + 8)^2$$

$$(10)^2$$

$$100$$

$$100 \div 5$$

$$20$$

19. ANSWER: **d**

Following PEMDAS,  $\sqrt{36} + |-50| - (-35),$

$$6 + 50 + 35$$

$$56 + 35$$

$$91$$

20. ANSWER: **b**

Translated, we have,  $\frac{x}{4} + 9$ . Since  $x = 4$ , then  $\frac{4}{4} + 9 = 1 + 9 = 10$ .

21. ANSWER: **a**

By following order of operations, and working from left to right, take the square of 4, by multiplying 4 times 4, and the same for 5 squared. Then subtract the two from each other, as follows:  $16 - 25 = -9$ .

22. ANSWER: **a**

Following order of operations and working in parentheses first, subtract the fractions which gives you,  $6/6$  or 1. Subtract  $1 - 8/9$  by turning 1 into  $9/9$ .  $9/9 - 8/9 = 1/9$

23. ANSWER: **c**

To write in expanded form, is,  $-6 \times 6 \times 6 = -216$ . The expanded notation is not  $(-6)(-6)(-6) = -216$ . Although the answer is the same, the number raised to the 3<sup>rd</sup> power is a positive 6, and then take the opposite of that.

# Tier 2 Practice Test Questions

## Solving Equations and Inequalities

- Solve for  $x$ :  $x + (-9) = 27$ 
  - $x = 18$
  - $x = 3$
  - $x = 243$
  - $x = 36$
- Solve for  $y$ :  $41 - y = 90$ 
  - $y = -49$
  - $y = -48$
  - $y = -47$
  - $y = -46$
- Solve for  $x$ :  $6x + 11 = -73$ 
  - $x = 10.3$
  - $x = 14$
  - $x = -10.3$
  - $x = -14$
- Solve for  $y$ :  $3y - 2 = 6 - 4y$ 
  - $y = 7/8$
  - $y = 4/7$
  - $y = 8/7$
  - $y = -4$
- When solving an equation, which option shows a result that would be translated to a solution of *all real numbers*?
  - $x = 1$
  - $x = 0$
  - $0 = 0$
  - $2 = 3$

(Test continued on next page)

6. Which equation matches the information: *Henry's appetite (H) is twice as big as Guy's appetite (G)*?
- a.  $2(G) = H$
  - b.  $G \times H = 2$
  - c.  $H(2) = G$
  - d.  $2 + G = H$
7. Maria can jump twice as high as Ji-ho. If Maria jumps 3 feet, how high does Ji-ho jump?
- a. 1.5 feet
  - b. 6 feet
  - c. 5 feet
  - d. 1 foot
8. Given  $h - 28 > 28$ , the graph of the solution set will have \_\_\_\_\_ circle? (Fill in the blank).
- a. a closed
  - b. an open

### Graphing

9. What is the domain for the following set of points?  
(1,2), (4,6), (8, 10), (12, 14)
- a. {2, 6, 10, 14}
  - b. {1, 4, 8, 12}
  - c. {1, 6, 8, 14}
  - d. {2, 4, 6, 8}

(Test continued on next page)

10. In Figure 10, which quadrant is the rectangle in?

- a. I
- b. II
- c. III
- d. IV

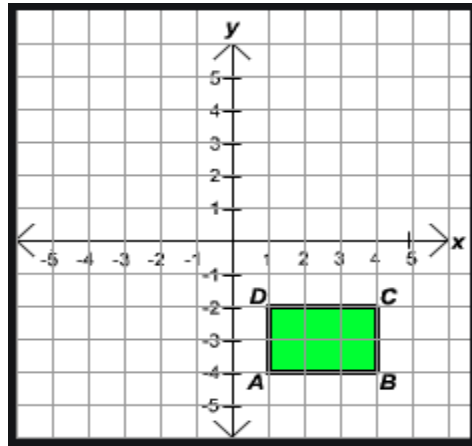


Figure 10

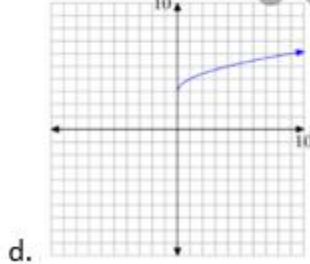
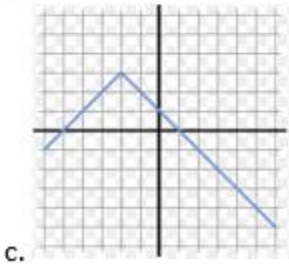
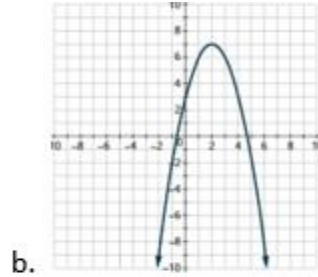
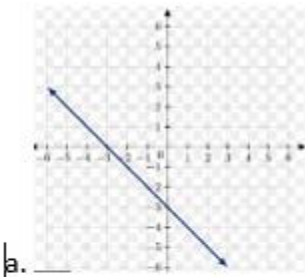
11. In what quadrant will you find the ordered pair  $(-13, -5)$ ?

- a. I
- b. II
- c. III
- d. IV

(Test continued on next page)



12. Which of the graphs below represents a linear equation?



13. What is the simplified slope of the line in Figure 11?

- a. Slope is  $8/10$
- b. Slope is  $10/8$
- c. Slope is  $4/5$
- d. Slope is  $5/4$

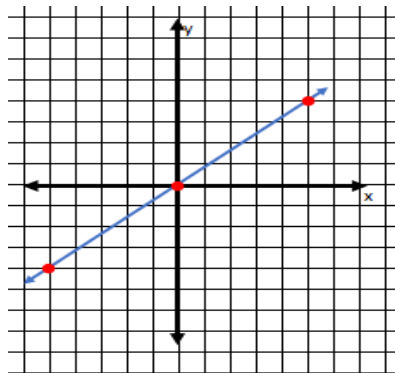


Figure 11

14. The slope-intercept formula,  $y = mx + b$ , can be used to identify the slope and y-intercept of a line.

Which variable in the formula represents the slope?

- a.  $y$
- b.  $b$
- c.  $x$
- d.  $m$

(Test continued on next page)

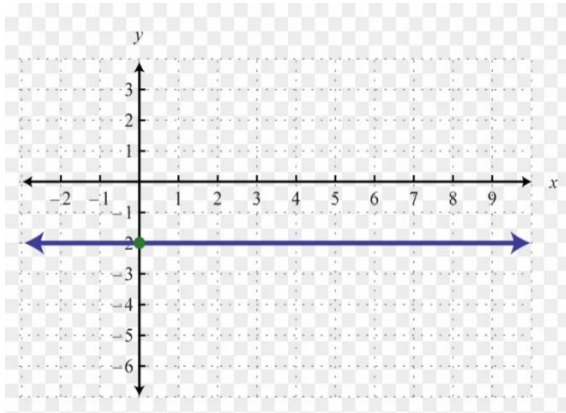
15. What can be said about the graphs of the lines  $y = 7x - 9$  and  $y = 7x + 5$ ?

- a. The lines are skew
- b. The lines are parallel
- c. The lines are perpendicular
- d. None of the above

16. What is the slope of the line in Figure 13?

- a. undefined
- b. -2
- c. 2
- d. 0

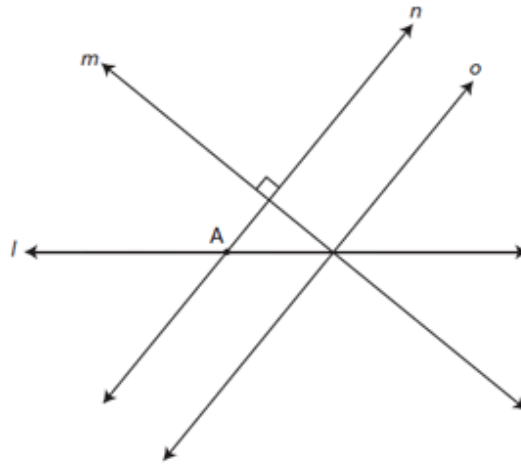
Figure 13



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17. In the *Figure 12* graph below, assuming lines *n* and *o* are parallel, which two lines are perpendicular?

- a. Lines *m* and *o*
- b. Lines *n* and *o*
- c. Lines *l* and *m*
- d. Lines *m* and *A*



*Figure 12*

### Exponents and Polynomials

18. Given the polynomial expression  $6x^4 + 5x + 1$ , the constant term is:

- a.  $5x$
- b.  $1$
- c.  $6x^4$
- d.  $x$

19. Add  $(-7x^7 + 5x^4 - 4x - 8) + (11x^7 - 10x^5 + 2x^4 + 4x - 9)$ .

- a.  $4x^7 - 10x^5 + 7x^4 - 17$
- b.  $-4x^7 + 10x^5 - 7x^4 + 17$
- c.  $4x^{14} - 5x^9 - 2x^5 + 4x - 17$
- d.  $x^{29} - 17$

(Test continued on next page)

20. Consider the rectangle with sides of  $(x + 3)$  and  $(4x - 7)$ . Find the area in terms of  $x$ .

- a.  $5x^2 - 4$
- b.  $4x^2 - 21$
- c.  $4x^2 - 5x - 21$
- d.  $4x^2 + 5x - 21$

## Statistics

21. Find the mean number of miles for the following 5 NASCAR Motor speedways: Talladega 2.660, Pocono 2.500, Atlanta, 1.540, Bristol 0.533 and Lowes (Charlotte) 1.500.

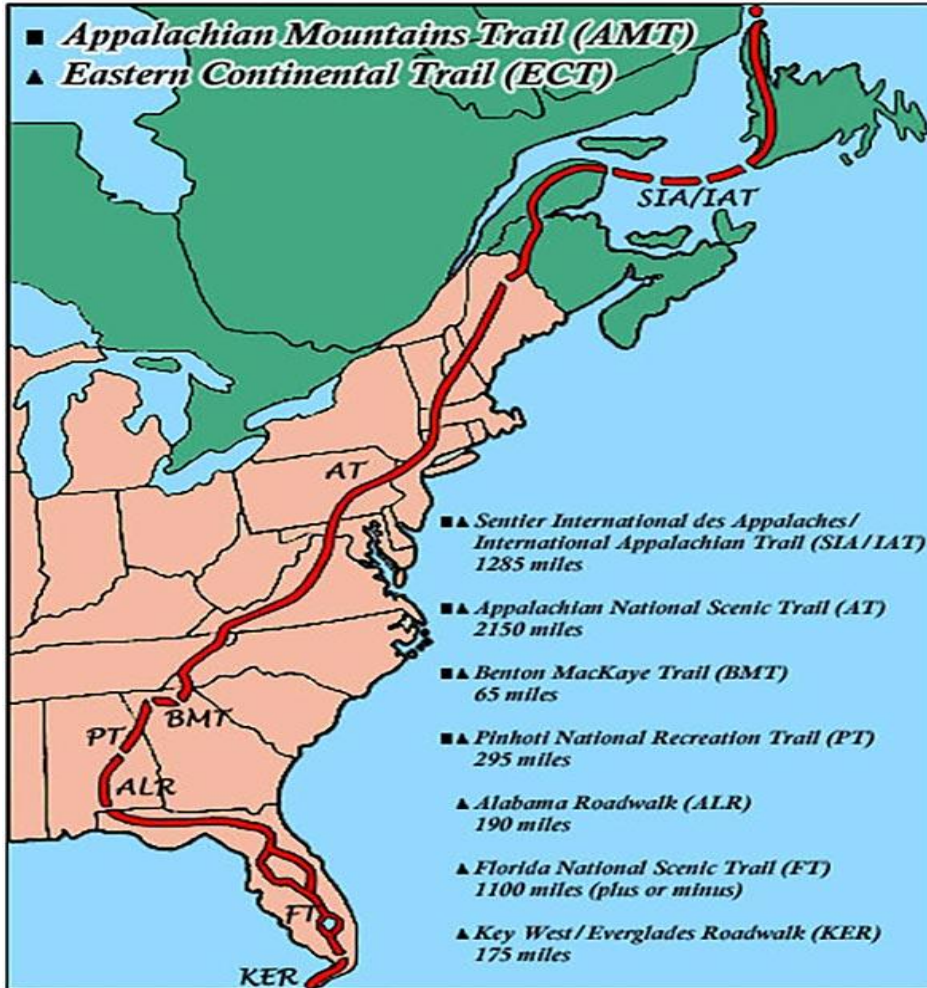
- a. 8.733 mi
- b. 1.540 mi
- c. 1.7466 mi
- d. 107046 mi

(Test continued on next page)

22. Using Figure 15, how many modes are there for the length of the top U.S. top hiking trails?

- a. 0
- b. 1
- c. 2
- d. 3

Figure 15



(End of Tier 2 test)

## Tier 2 Answers and Explanations

1. ANSWER: **d** Using the Addition Property of Equality to solve for  $x$ , add 9 (opposite of -9) to both sides. The solution is  $x = 36$ .

2. ANSWER: **a** Solve using the Addition and Multiplication Properties of Equality.

$$\begin{aligned}41 - y &= 90 \\ \cancel{41} - \cancel{41} - y &= 90 - 41 \\ -y &= 49 \\ \cancel{-1}y &= \frac{49}{\cancel{-1}} \\ y &= -49\end{aligned}$$

3. ANSWER: **d** Solve using the Addition and Multiplication Properties of Equality.

$$\begin{aligned}6x + 11 &= -73 \\ \cancel{6x} + \cancel{11} - \cancel{11} &= -73 - 11 \\ 6x &= -84 \\ \cancel{6}x &= \frac{-84}{\cancel{6}} \\ x &= -14\end{aligned}$$

4. ANSWER: **c** Solve using the Addition and Multiplication Properties of Equality.

$$\begin{aligned}3y - 2 &= 6 - 4y \\ 3y + 4y - 2 &= 6 - \cancel{4y} + \cancel{4y} \\ 7y - \cancel{2} + \cancel{2} &= 6 + 2 \\ \cancel{7}y &= \frac{8}{\cancel{7}} \\ y &= \frac{8}{7}\end{aligned}$$

5. ANSWER: **c** For an equation to have a solution of all real numbers, the equation must be an identity. This means that the two sides are identical, as they are with  $0 = 0$ .

6. ANSWER: **a** Replacing the names with their first letters and the word *is* with  $=$ , we get  $H=2(G)$ , which is equivalent to  $2(G)=H$ .

7. ANSWER: **a** Since Maria can jump twice as high as Ji-ho, then Ji-ho jumps half as high as Maria.

8. ANSWER: **b** Isolate the variable by adding 28 to both sides.  $h > 56$ . The graph of the inequality will be open since the inequality means "*h is greater than 56*".
9. ANSWER: **b** The numbers are 1, 4, 8, and 12. These are all the x coordinates, which represents the domain of x.
10. ANSWER: **d** The quadrants are counted counterclockwise beginning with the top right quadrant, so the box is in quadrant IV
11. ANSWER: **c** The point is in quadrant III because both coordinates are negative.
12. ANSWER: **a** The graph of a linear equation is a straight line.
13. ANSWER: **c** Using rise/run the slope is  $\frac{4}{5}$ , which is the simplified version of  $\frac{8}{10}$ .
14. ANSWER: **d** The  $m$  represents the slope of a line in the formula. The variables  $x$  and  $y$  represent the coordinates of points on the line, and the  $b$  represents the  $y$ -intercept.
15. ANSWER: **b** The slope in both equations is  $m = 7$ . Since the slopes are equal, the lines are parallel.
16. ANSWER: **d** The line is horizontal, so the slope is zero. If the graph were a vertical line, as in the equation  $x = -2$ , the slope would be undefined
17. ANSWER: **a** Since line  $n$  and  $o$  are parallel, and line  $m$  is perpendicular to  $n$ , then  $m$  is also perpendicular to  $o$ .

18. ANSWER: **b** The constant term in this polynomial expression is 1 since it is the only term without a variable. The other terms are variable terms, and the numbers in front of the variables are called coefficients.

19. ANSWER: **a** Since it is addition, simply remove the parentheses and combine like terms.

20. ANSWER: **d** Use the FOIL method to multiply the two binomials

21. ANSWER: **c** Adding all the values and dividing by 5 gives the mean of 1.7466.

22. ANSWER: **a** There is no reoccurrence of numbers (miles).