

Pre-Algebra Review

Practice set · 91 questions

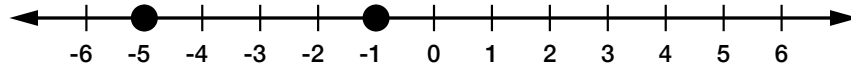
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Unit 1: Foundations Review

1. Two numbers are shown on the number line. Which comparison is true?



- A. $-5 < -1$ B. $-5 > -1$
C. $-1 < -5$ D. $-5 = -1$

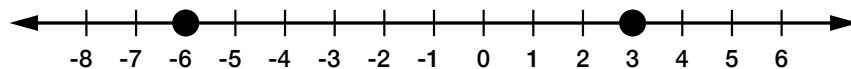
2. A scuba diver is at an elevation of -32 feet. How far is the diver from the surface?

- A. -32 feet B. 32 feet
C. 0 feet D. 64 feet

3. Which sum is positive?

- A. $-8 + 3$ B. $-4 + (-2)$
C. $-6 + 9$ D. $-9 + 9$

4. What is the distance between the two points shown on the number line?



- A. 3 B. -9
C. 9 D. 8

5. Multiply.

$$-11 \cdot (-4)$$

- A. 44 B. -44
C. -15 D. 15

6. Simplify.

$$36 \div 4 \cdot 3 - 2^2$$

A. 23

B. -1

C. 25

D. 21

7. Write the fraction in simplest form.

$$\frac{16}{24}$$

A. $\frac{8}{12}$

B. $\frac{2}{3}$

C. $\frac{3}{4}$

D. $\frac{3}{8}$

8. Maya has $\frac{7}{8}$ yard of ribbon and uses $\frac{1}{4}$ yard on a gift. How much ribbon is left?

A. $\frac{3}{4}$ yard

B. $\frac{3}{2}$ yards

C. $\frac{5}{8}$ yard

D. $\frac{1}{2}$ yard

9. Multiply.

$$8 \cdot \frac{3}{4}$$

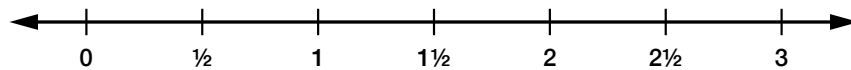
A. 24

B. 6

C. $\frac{32}{3}$

D. $\frac{3}{32}$

10. The number line from 0 to 3 is marked in $\frac{1}{2}$ -unit steps. How many $\frac{1}{2}$ s are in 3?



A. 3

B. 6

C. 12

D. 2

11. Subtract.

$$6.2 - 3.85$$

A. 3.65

B. 2.35

C. 2.45

D. 3.35

12. Grapes cost \$2.40 per pound. How much do 3.5 pounds of grapes cost?

A. \$84.00

B. \$0.84

C. \$8.40

D. \$5.90

13. Divide.

$$0.3 \div 0.04$$

A. 0.75

B. 75

C. 7.5

D. 0.075

14. A class of 30 students voted for an activity, as shown in the table. How many students voted for art?

Class Activity Vote

Activity	Percent
Art	40%
Music	35%
Drama	25%

A. 40

B. 12

C. 10.5

D. 18

15. A dinner bill is \$45 and a 20% tip is added. What is the total?

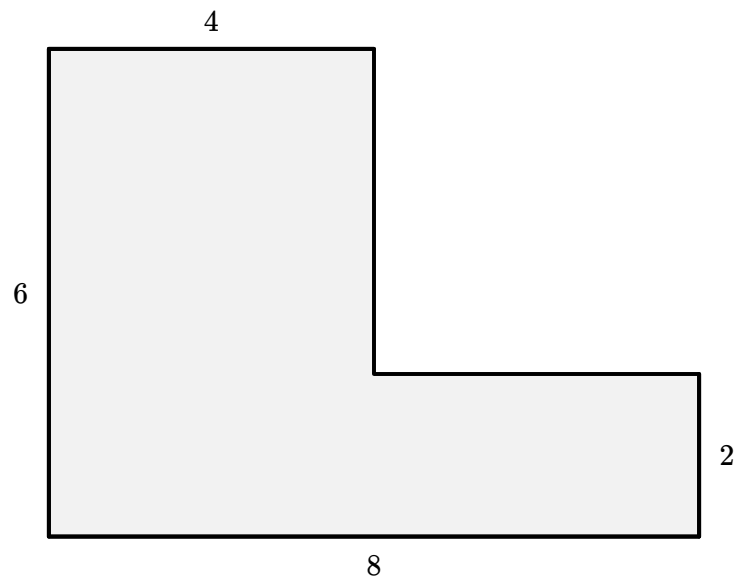
A. \$9

B. \$65

C. \$36

D. \$54

16. Find the area of the figure.



A. 48 square units

B. 40 square units

C. 24 square units

D. 32 square units

Unit 2: Exponents & Scientific Notation

17. Evaluate.

$$2^4$$

A. 8

B. 16

C. 6

D. 24

18. A supercomputer performs about 10^8 calculations each second. How many calculations does it perform in 10^3 seconds? Write the answer as a single power.

A. 10^{24}

B. 10^{11}

C. 10^5

D. 100^{11}

19. Write as a single power.

$$(2^4)^3 \cdot 2^2$$

A. 2^9

B. 2^{24}

C. 2^{10}

D. 2^{14}

20. The table shows the pattern of powers of 4 — each value is the one above it divided by 4. Which values complete the table?

Power	Value
4^2	16
4^1	4
4^0	?
4^{-1}	?

A. 1 and $\frac{1}{4}$

B. 0 and -4

C. 0 and $-\frac{1}{4}$

D. 1 and -4

21. What is the value of 10^0 ?

A. 0

B. 1

C. 10

D. 100

22. Add. Write the answer in scientific notation.

$$4.5 \cdot 10^5 + 3 \cdot 10^4$$

A. $7.5 \cdot 10^5$

B. $7.5 \cdot 10^9$

C. $4.8 \cdot 10^5$

D. $4.8 \cdot 10^9$

Unit 3: Real Numbers

23. Which fraction has a decimal form that terminates?

A. $\frac{5}{6}$
C. $\frac{4}{9}$

B. $\frac{3}{20}$
D. $\frac{7}{12}$

24. Which fraction is equal to $0.\overline{27}$?

A. $\frac{27}{100}$
C. $\frac{9}{11}$

B. $\frac{3}{10}$
D. $\frac{3}{11}$

25. A square garden covers 196 square feet. How long is each side of the garden?

A. 49 feet
C. 14 feet

B. 98 feet
D. 13 feet

26. Which value is greater?

$\sqrt[3]{64}$ and $\sqrt{64}$

A. $\sqrt[3]{64}$ is not a real number.
C. They are equal.

B. $\sqrt{64}$
D. $\sqrt[3]{64}$

27. Which statement describes the number $\sqrt[3]{27}$?

A. It is irrational because it is written with a root symbol.
C. It is rational but not an integer.

B. It is a whole number, an integer, and a rational number.
D. It is an integer but not a rational number.

28. Which number is closest to $\sqrt{30}$ on the number line?

A. 5.5
C. 6

B. $\frac{16}{3}$
D. 5.4

Unit 4: Algebraic Expressions

29. What is the coefficient of x in the expression?

$$4x + 9$$

A. x

B. 9

C. 4

D. 13

30. Which expression represents “4 more than the quotient of a number n and 5”?

A. $\frac{n}{5} - 4$

B. $5n + 4$

C. $\frac{n + 4}{5}$

D. $\frac{n}{5} + 4$

31. Evaluate for $a = -2$ and $b = 4$.

$$3a + 2b$$

A. 14

B. 2

C. -14

D. 7

32. Each of 4 friends buys a sandwich that costs x dollars and a drink that costs 3 dollars, so the group spends $4(x + 3)$ in total. Which expression is equivalent to the total?

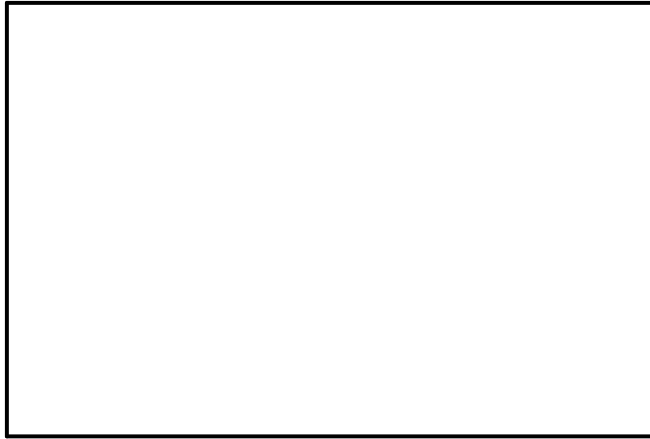
A. $4x + 12$

B. $4x + 3$

C. $x + 12$

D. $4x + 7$

- 33.** The rectangle has length $x + 4$ and width x . Which expression is equivalent to its perimeter, $2(x + 4) + 2x$?



A. $x^2 + 4x$

B. $4x + 4$

C. $2x + 8$

D. $4x + 8$

- 34.** A car-wash fundraiser brought in $6x + 18$ dollars, shared equally among 6 students. Which factored form shows one student's share inside the parentheses?

A. $6(x + 18)$

B. $6(x + 3)$

C. $2(3x + 9)$

D. $3(2x + 6)$

Unit 5: Equations & Inequalities

35. Which value of x is a solution of the equation?

$$3x - 4 = 11$$

A. $x = 3$

B. $x = 5$

C. $x = 7$

D. $x = 4$

36. Solve.

$$\frac{x}{10} = -6$$

A. $x = 60$

B. $x = -\frac{3}{5}$

C. $x = 4$

D. $x = -60$

37. Solve.

$$\frac{x}{3} - 5 = -2$$

A. $x = 9$

B. $x = -9$

C. $x = -21$

D. $x = 1$

38. Four friends each buy a movie ticket for x dollars and a 3-dollar snack. Together they spend 44 dollars. Solve $4(x + 3) = 44$ to find the price of one ticket.

A. \$11

B. \$32

C. \$8

D. \$10.25

39. Solve.

$$9x + 4 = 5x - 16$$

A. $x = -5$

B. $x = 5$

C. $x = -3$

D. $x = 3$

40. Twice the sum of a number and 5 is 26. What is the number?

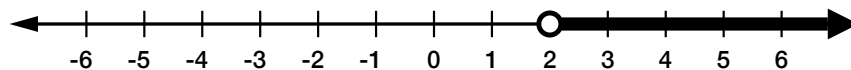
A. 10.5

B. 13

C. 16

D. 8

41. Which number is a solution of the inequality shown on the number line?



A. 2

B. 0

C. -5

D. 3

42. An arcade charges 4 dollars to enter plus 8 dollars per game. Leo can spend at most 60 dollars. Solve $8g + 4 \leq 60$ to find the numbers of games g he can afford.

A. $g \leq 8$

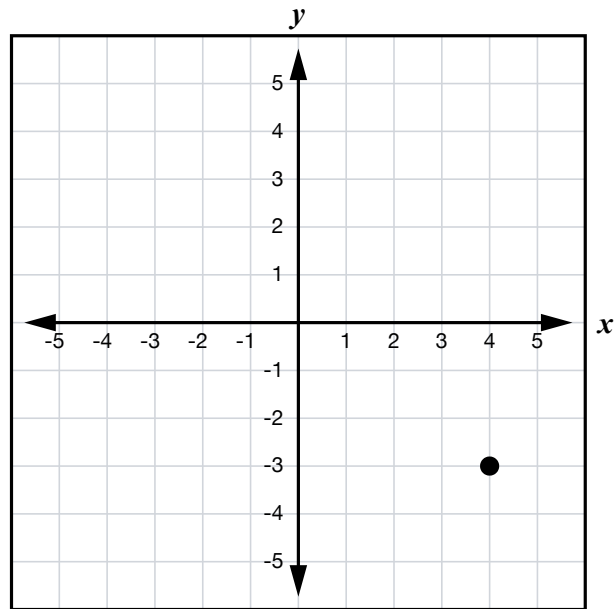
B. $g \geq 7$

C. $g \leq 7$

D. $g \leq 7.5$

Unit 6: Linear Relationships

43. What are the coordinates of the point shown?



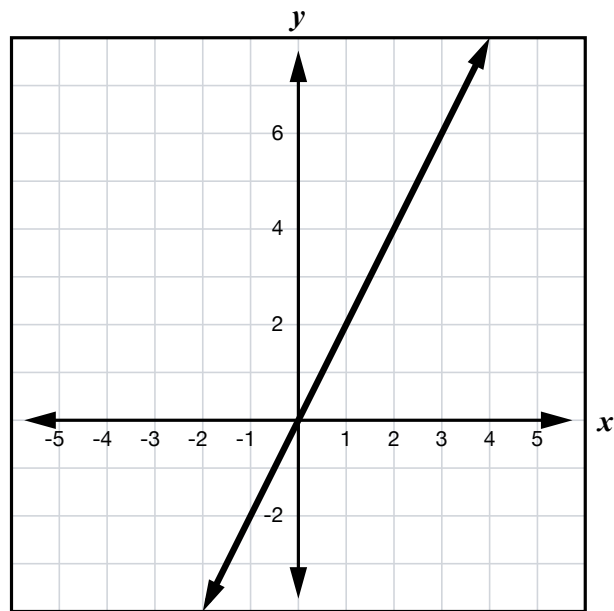
A. $(-3, 4)$

B. $(-4, 3)$

C. $(4, -3)$

D. $(3, -4)$

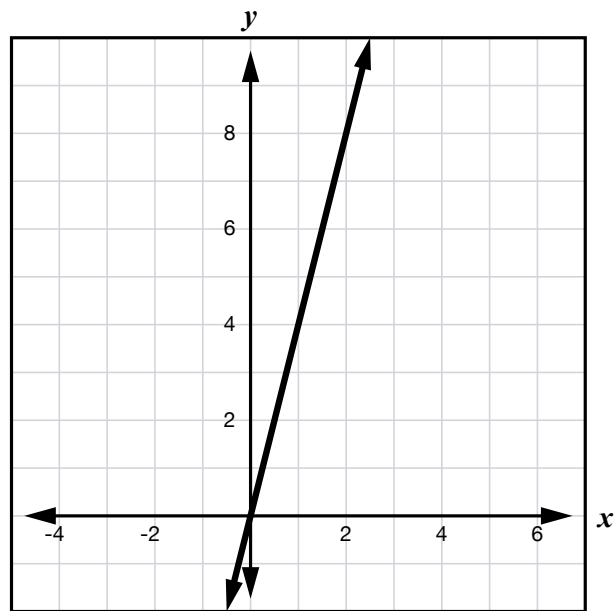
44. Does the graph show a proportional relationship?



- A. No — a graph can never show a proportion.
C. Yes — it is a straight line through the origin.

- B. Yes — because the line points up to the right.
D. No — the line should be curved.

45. The graph shows a proportional relationship. Which equation matches the graph?



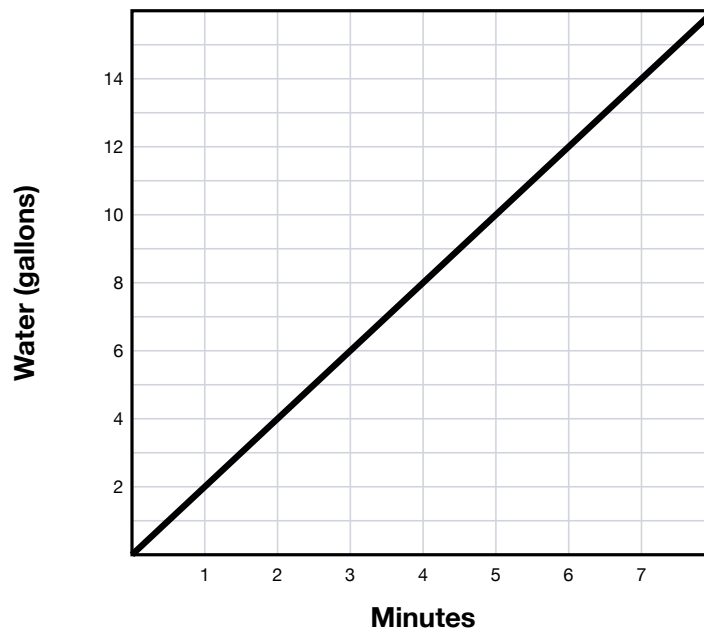
A. $y = 2x$

B. $y = 8x$

C. $y = 4x$

D. $y = x + 6$

46. The graph shows the amount of water in a tank as it fills at a steady rate. What is the unit rate?



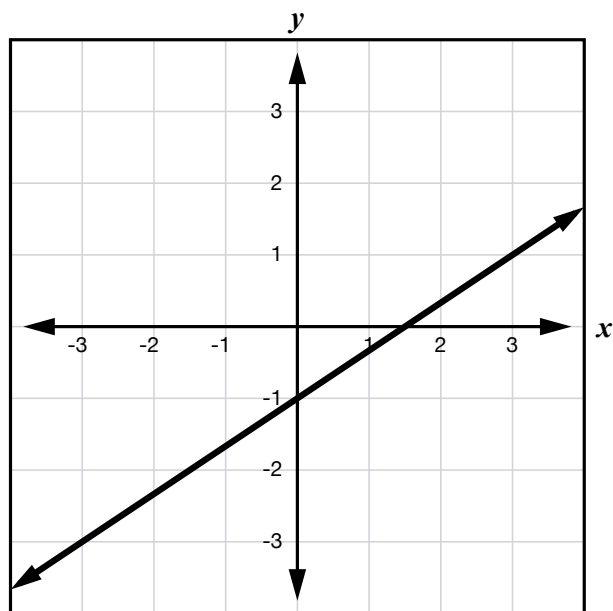
A. 12 gallons per minute

B. $\frac{1}{2}$ gallon per minute

C. 6 gallons per minute

D. 2 gallons per minute

47. Find the slope of the line.



- A. $\frac{2}{3}$
C. $-\frac{2}{3}$

- B. $\frac{3}{2}$
D. 1

48. A slide drops 2 feet for every 5 feet it runs horizontally. Over a horizontal run of 15 feet, how many feet does it drop?

- A. 15
C. 12

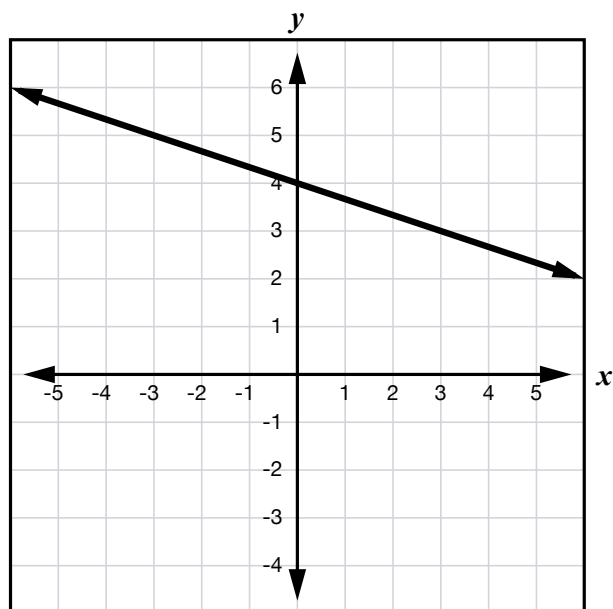
- B. 30
D. 6

49. Find the slope of the line through $(1, 2)$ and $(4, 11)$.

- A. $\frac{1}{3}$
C. 3

- B. 9
D. -3

50. What is the equation of the line shown in slope-intercept form?



A. $y = \frac{1}{3}x + 4$

B. $y = -\frac{1}{3}x + 4$

C. $y = -3x + 4$

D. $y = -\frac{1}{3}x - 4$

51. A table is being built for $y = 5x - 2$. What is y when $x = 0$?

A. 2

B. -2

C. 3

D. -7

52. A streaming plan costs 10 dollars per extra device plus a 25-dollar base, so the bill is $y = 10x + 25$. Devin's bill was 85 dollars. How many extra devices did he have?

A. 11

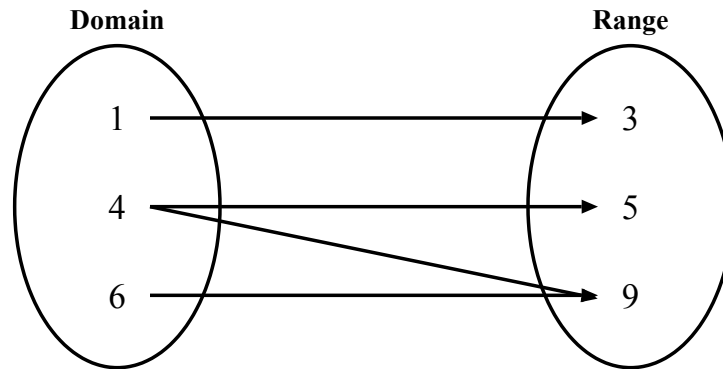
B. 60

C. 6

D. 8

Unit 7: Functions

53. Is the relation shown in the mapping diagram a function?



- A. Yes — every input is matched to an output.
- B. No — the input 4 has two different outputs.
- C. No — the inputs 4 and 6 share the output 9.
- D. Yes — there are three inputs and three outputs.

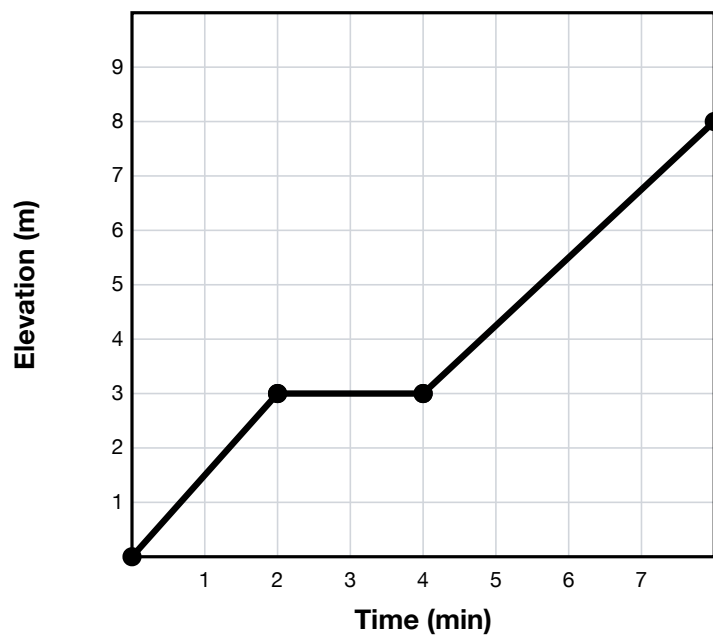
54. Gym A's total cost after x months is $y = 25x + 80$. Gym B charges a 60-dollar signup fee plus 25 dollars each month. Which gym has the greater starting cost — the cost before any months pass?

- A. Gym B — its starting cost is 60 dollars.
- B. Gym A — its starting cost is 80 dollars.
- C. Gym A — it charges 25 dollars each month.
- D. They have the same starting cost.

55. Marisol says the equation $y = x(x + 3)$ is linear because she does not see an exponent. Is she correct?

- A. No — distributing gives $y = x^2 + 3x$, which has an exponent of 2 on x .
- B. Yes — the equation fits $y = mx + b$ with $m = x + 3$.
- C. Yes — there is no exponent written in the equation.
- D. No — a linear equation can never contain parentheses.

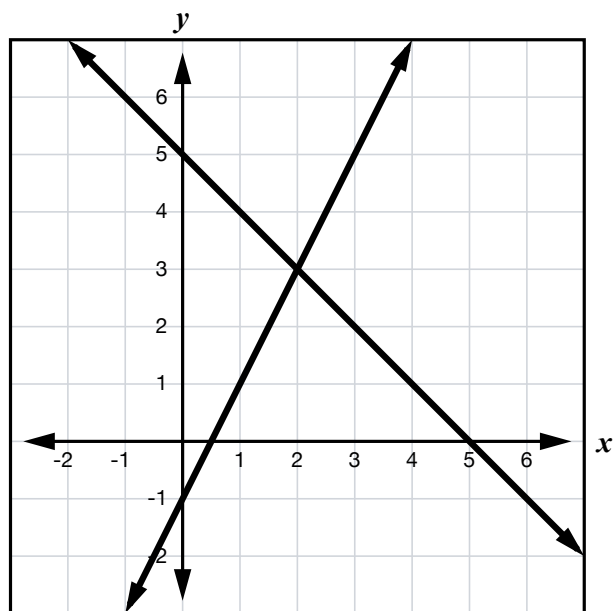
56. The graph shows a hiker's elevation during a hike. Which statement is true?



- A. The hiker rested in the middle, then climbed higher. B. The hiker walked downhill the whole time.
C. The hiker never stopped to rest. D. The hiker returned to the starting elevation.

Unit 8: Systems of Equations

57. The graph shows a system of two equations. What is the solution of the system?



A. (3, 2)

B. (0, 5)

C. (0, -1)

D. (2, 3)

58. How many solutions does the system $y = 3x - 1$ and $y = -2x + 4$ have?

A. No solution

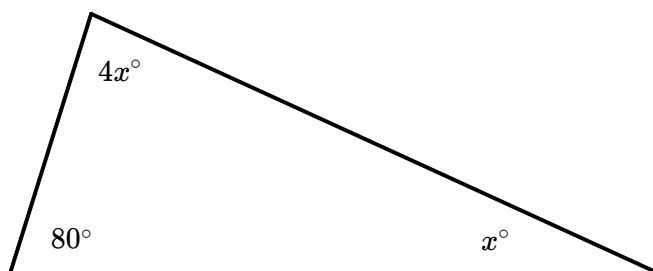
B. Infinitely many solutions

C. It cannot be determined from the equations.

D. Exactly one solution

Unit 9: Triangles & the Pythagorean Theorem

59. The angles of the triangle measure x° , $4x^\circ$, and 80° . Solve for x .



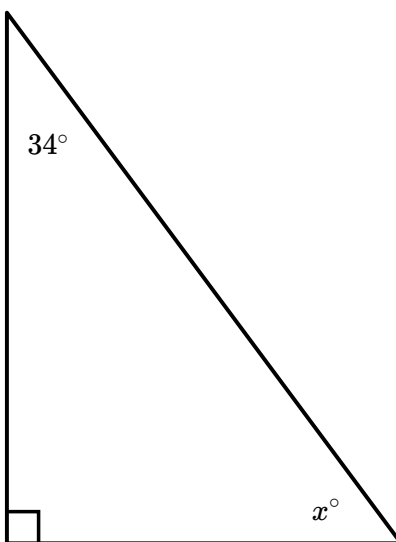
A. $x = 25$

B. $x = 100$

C. $x = 20$

D. $x = 36$

60. The triangular sail shown has a right angle at one corner and a 34° angle at another. What is the measure of the third angle?



A. 146°

B. 66°

C. 124°

D. 56°

61. A 26-foot ladder leans against a wall. Its base sits 10 feet from the wall. How far up the wall does the ladder reach?

A. 24 feet

B. 16 feet

C. 28 feet

D. 36 feet

62. The two shorter sides of a triangle measure 9 and 40. What must the length of the longest side be for the triangle to be a right triangle?

A. 31

B. 49

C. 1681

D. 41

63. What is the distance between the points $(2, 3)$ and $(7, 15)$?

A. 13

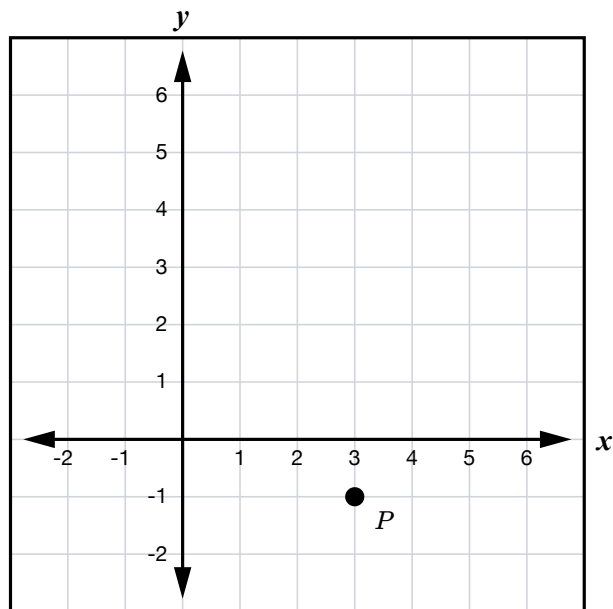
B. 17

C. 169

D. 12

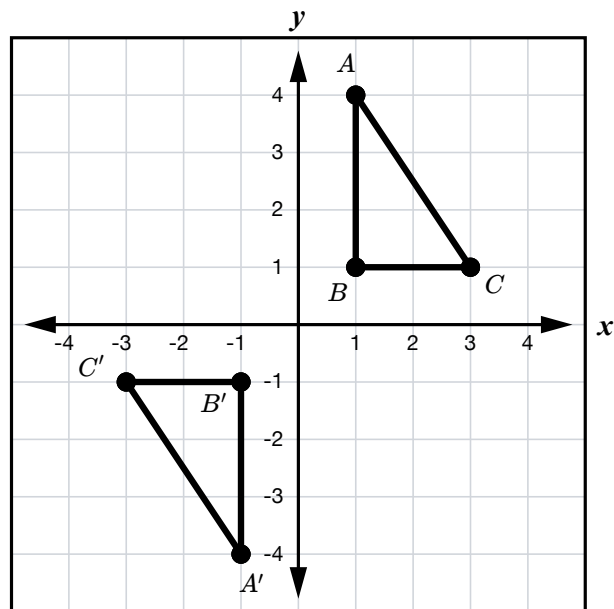
Unit 10: Transformations

64. A figure is translated by the rule $(x, y) \rightarrow (x - 2, y + 6)$. What is the image of the point $(3, -1)$?



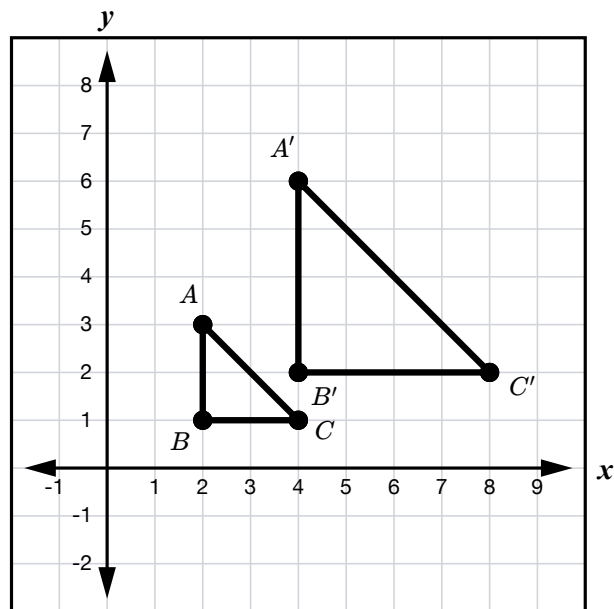
- A. $(1, 5)$
B. $(5, 5)$
C. $(1, -7)$
D. $(5, -7)$
65. Which rule describes a reflection over the x -axis?
- A. $(x, y) \rightarrow (-x, y)$
B. $(x, y) \rightarrow (x, -y)$
C. $(x, y) \rightarrow (-x, -y)$
D. $(x, y) \rightarrow (y, x)$

66. In the figure, $\triangle A'B'C'$ is the image of $\triangle ABC$. Which transformation maps $\triangle ABC$ onto $\triangle A'B'C'$?



- A. A 90° counterclockwise rotation about the origin
B. A 180° rotation about the origin
C. A reflection over the x -axis
D. A reflection over the y -axis

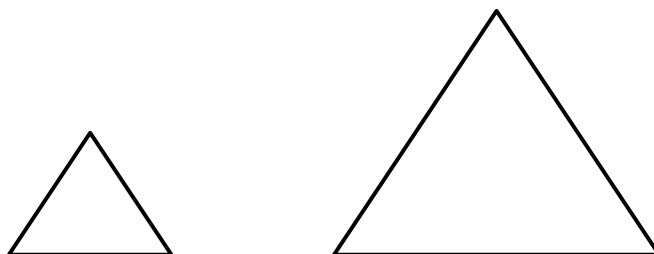
67. $\triangle A'B'C'$ is the image of $\triangle ABC$ after a dilation centered at the origin. What scale factor was used?



- A. $\frac{1}{2}$ B. 2
C. 3 D. 4

Unit 11: Congruence & Similarity

68. Which transformation does not always produce an image congruent to the original figure?



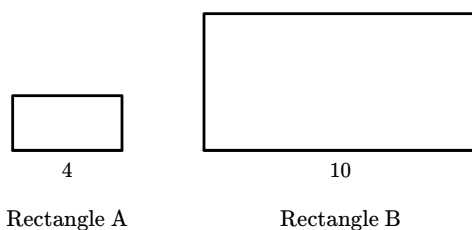
A. Rotation

B. Translation

C. Reflection

D. Dilation

69. Rectangle B is a dilation of rectangle A, as shown. What is the scale factor k ?



A. 2.5

B. 6

C. 0.4

D. 40

70. Triangle ABC is similar to triangle DEF . $AB = 6$, $DE = 18$, and $BC = 5$. What is EF ?

A. 3

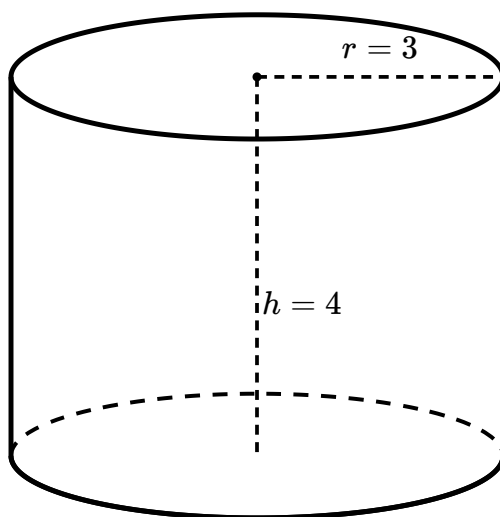
B. 15

C. 17

D. 90

Unit 12: Volume & Surface Area

71. Find the volume of a cylinder with radius 3 and height 4. Use $\pi \approx 3.14$.



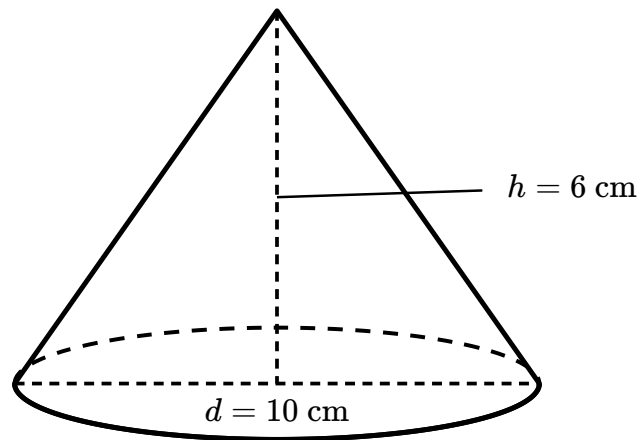
A. 37.68

B. 75.36

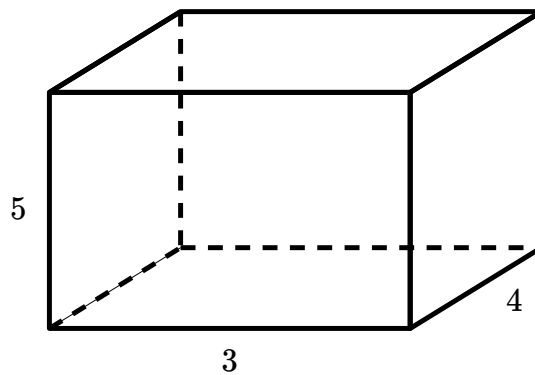
C. 113.04

D. 452.16

72. A paper snow-cone cup is a cone with a diameter of 10 centimeters and a height of 6 centimeters. How much shaved ice fills it exactly to the top? Use $\pi \approx 3.14$.

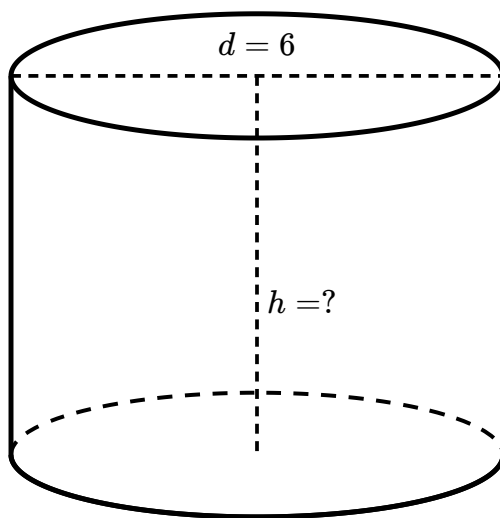


- A. 471 cm^3
B. 157 cm^3
C. 628 cm^3
D. 31.4 cm^3
73. A rectangular prism has a 3 by 4 base and height 5. What is its total surface area?



- A. 94
B. 70
C. 82
D. 60

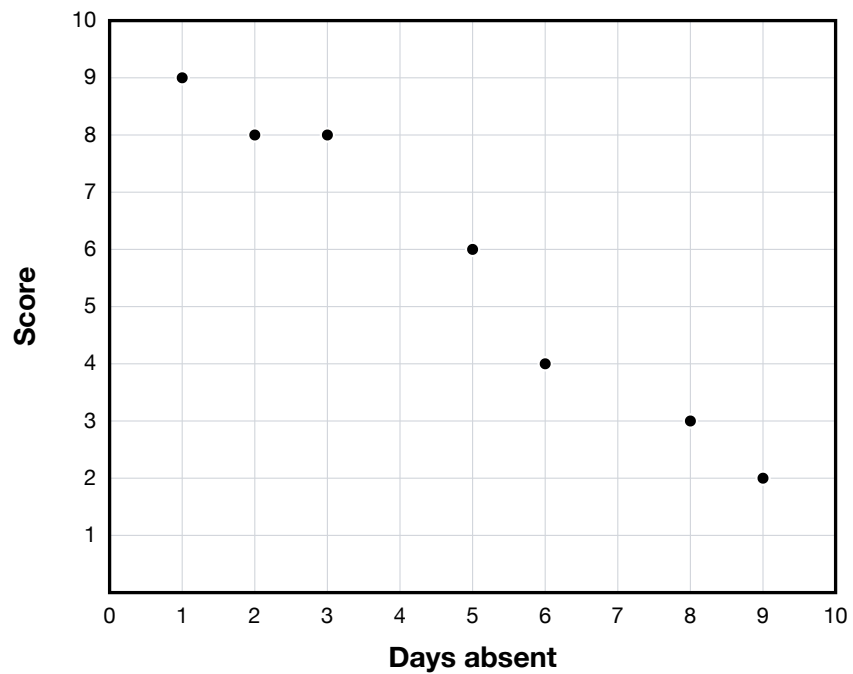
74. The cylinder shown is labeled with its diameter. It has a volume of 565.2. What is its height? Use $\pi \approx 3.14$.



- A. 5
B. 60
C. 20
D. 10

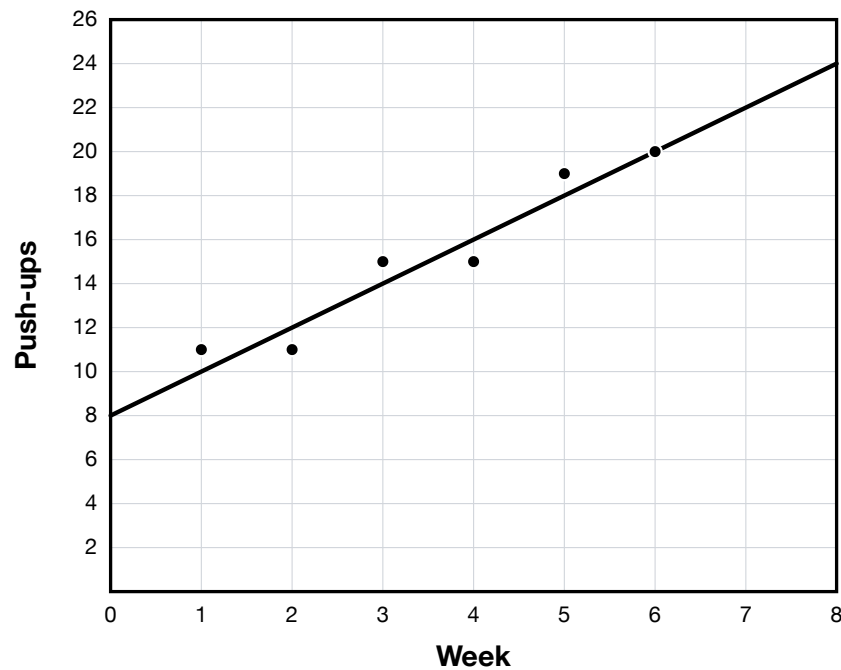
Unit 13: Data & Statistics

75. The scatter plot shows days absent and test scores for a class. Which association does the plot show?



- A. Positive association
- B. Negative association
- C. No association
- D. It cannot be determined from a scatter plot

76. The scatter plot shows how many push-ups a student can do at each week of training, with a trend line. Predict the number of push-ups at week 7.



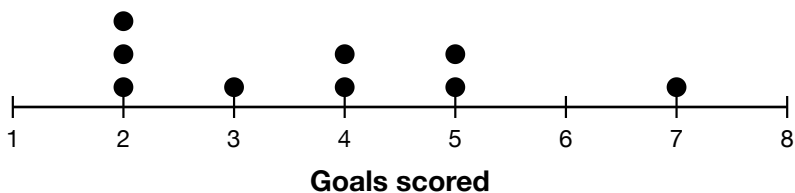
- A. 14 B. 22
C. 20 D. 24

77. Commuters were surveyed in the morning and the evening about how they traveled. How many evening commuters were surveyed?

	Bus	Car	Total
Morning	22	?	35
Evening	?	9	?
Total	40	22	62

- A. 18 B. 27
C. 22 D. 13

78. The dot plot shows the goals a team scored in each of its games. What is the median number of goals?



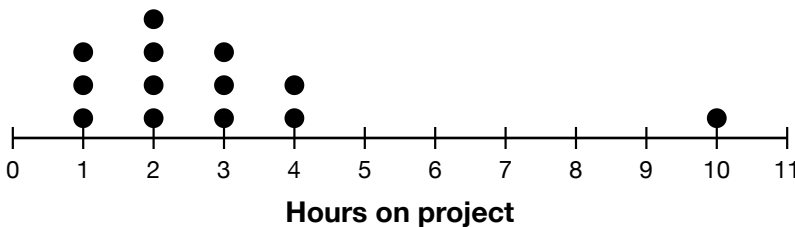
- A. 2
B. 3
C. 4
D. 5

79. The data set shows overnight low temperatures in °F. Find the range.

−6, 2, 9, −1, 4

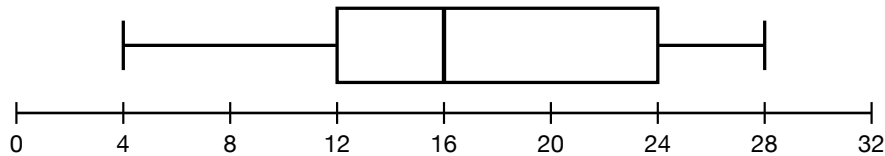
- A. 3
B. 9
C. 10
D. 15

80. The dot plot shows the number of hours students spent on a project. Which value is an outlier?



- A. 10
B. 2
C. 1
D. 4

81. What is Q_3 , the upper quartile, of the data shown in the box plot?



- A. 16
B. 24
C. 28
D. 12

82. The school band votes on whether music class should be required, and 90% say yes. A student concludes that 90% of the whole school agrees. Why is this conclusion not valid?

- A.** A result of 90% is too high to be believable
- B.** She should have surveyed exactly half of the school
- C.** Band members are not a random sample of all students and already like music
- D.** Percents cannot be used to describe a survey

Unit 14: Probability

83. A spinner has 10 equal sections numbered 1–10. What is the probability of spinning a number less than 4?

A. $\frac{2}{5}$
C. $\frac{7}{10}$

B. $\frac{3}{10}$
D. $\frac{1}{10}$

84. At a school cafeteria, the experimental probability that a student buys milk with lunch is $\frac{3}{5}$. Out of 200 students, about how many are expected to buy milk?

A. 120
C. 100

B. 40
D. 150

85. A club with 6 members is choosing a president and then a vice-president. No member can hold both jobs. How many different ways can the two jobs be filled?

A. 36
C. 15

B. 30
D. 11

86. The table shows the marbles in a jar. You draw one marble, put it back, and draw again. What is the probability of drawing red first and green second?

Color	Marbles
Red	3
Blue	2
Green	5

A. $\frac{3}{20}$
C. $\frac{1}{6}$

B. $\frac{4}{5}$
D. $\frac{2}{5}$

87. You deposit \$600 in a savings account that pays 5% simple interest. How much interest do you earn in 3 years?

A. \$30
B. \$690
C. \$90
D. \$9,000

88. You deposit \$2,000 at 10% compound interest. How much interest do you earn in 3 years?

A. \$2,662
B. \$662
C. \$600
D. \$200

89. Two credit plans pay for the same couch. Plan A charges 90 dollars a month for 12 months. Plan B charges 60 dollars a month for 20 months. Jade picks Plan B because its monthly payment is smaller. How much more does Plan B actually cost than Plan A in total?

A. \$30
B. \$1,080
C. \$240
D. \$120

90. The table shows a college savings account that grows by the same amount each year. One year of college costs 30,000 dollars. If the pattern continues, what percent of the cost will be saved by the end of year 5?

Year	Total saved (dollars)
1	3,000
2	6,000
3	9,000
4	12,000

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91. Which of these is a reason to pay with cash or a debit card instead of a credit card?

- A.** You can buy things even when you have no money.
- B.** You never owe interest, because you spend money you already have.
- C.** You always earn rewards you must pay back.
- D.** The store gives you a lower price for using credit.

Answer Key

Unit 1: Foundations Review

- | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 1. A | 2. B | 3. C | 4. C | 5. A | 6. A |
| 7. B | 8. C | 9. B | 10. B | 11. B | 12. C |
| 13. C | 14. B | 15. D | 16. D | | |

Unit 2: Exponents & Scientific Notation

- | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 17. B | 18. B | 19. D | 20. A | 21. B | 22. C |
|--------------|--------------|--------------|--------------|--------------|--------------|

Unit 3: Real Numbers

- | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 23. B | 24. D | 25. C | 26. B | 27. B | 28. A |
|--------------|--------------|--------------|--------------|--------------|--------------|

Unit 4: Algebraic Expressions

- | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 29. C | 30. D | 31. B | 32. A | 33. D | 34. B |
|--------------|--------------|--------------|--------------|--------------|--------------|

Unit 5: Equations & Inequalities

- | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 35. B | 36. D | 37. A | 38. C | 39. A | 40. D |
| 41. D | 42. C | | | | |

Unit 6: Linear Relationships

- | | | | | | |
|--------------|--------------|--------------|--------------|--------------|--------------|
| 43. C | 44. C | 45. C | 46. D | 47. A | 48. D |
| 49. C | 50. B | 51. B | 52. C | | |

Unit 7: Functions

- | | | | |
|--------------|--------------|--------------|--------------|
| 53. B | 54. B | 55. A | 56. A |
|--------------|--------------|--------------|--------------|

Unit 8: Systems of Equations

- | | |
|--------------|--------------|
| 57. D | 58. D |
|--------------|--------------|

Unit 9: Triangles & the Pythagorean Theorem

- | | | | | |
|--------------|--------------|--------------|--------------|--------------|
| 59. C | 60. D | 61. A | 62. D | 63. A |
|--------------|--------------|--------------|--------------|--------------|

Unit 10: Transformations

- | | | | |
|--------------|--------------|--------------|--------------|
| 64. A | 65. B | 66. B | 67. B |
|--------------|--------------|--------------|--------------|

Unit 11: Congruence & Similarity

68. **D** 69. **A** 70. **B**

Unit 12: Volume & Surface Area

71. **C** 72. **B** 73. **A** 74. **C**

Unit 13: Data & Statistics

75. **B** 76. **B** 77. **B** 78. **C** 79. **D** 80. **A**
81. **B** 82. **C**

Unit 14: Probability

83. **B** 84. **A** 85. **B** 86. **A**

Unit 15: Financial Literacy

87. **C** 88. **B** 89. **D** 90. **B** 91. **B**