

**2014 Oak Park Back to School Packet for incoming 9th graders. Part 2**  
**Please show all work in the space provided for each question.**

**Multiple Choice**

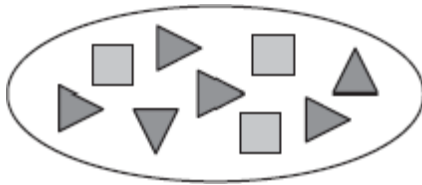
Identify the choice that best completes the statement or answers the question.

1. Find the missing number that makes the ratios equivalent.

$$\frac{?}{4} = \frac{5}{16}$$

- a. 1  
 b. 15  
 c. 20  
 d.  $\frac{5}{4}$

2. Write a ratio to compare the number of squares to the number of triangles.



- a.  $\frac{3}{12}$   
 b.  $\frac{3}{15}$   
 c.  $\frac{3}{6}$   
 d.  $\frac{1}{3}$

3. Simplify  $3.88 + 1.24$ .

- a. 4.12  
 b. 0.0512  
 c. 5.12  
 d. 4.10

4. Find the missing number in the proportion:

$$\frac{2}{?} = \frac{12}{42}$$

- a. 6  
 b. 4  
 c. 8  
 d. 7

5. Simplify  $2\frac{3}{4} \div \frac{1}{3}$ .

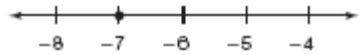
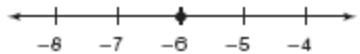
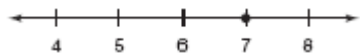
- a.  $4\frac{1}{4}$   
 b.  $8\frac{1}{4}$   
 c.  $\frac{11}{12}$   
 d.  $2\frac{1}{4}$

6. Find 1% of 230.

- a. 230  
 b. 23  
 c. 2.3  
 d. 0.23

7. Simplify  $\frac{6}{7} - \frac{3}{5}$ .

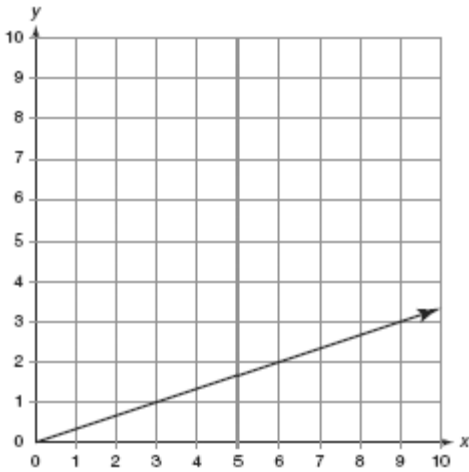
- a.  $\frac{3}{7}$   
 b.  $\frac{9}{35}$   
 c.  $\frac{3}{2}$   
 d.  $\frac{3}{35}$

8. Find 28% of 176.
- 49.28
  - 6.29
  - 4.928
  - 5.00
9. Lauren bakes 30 oatmeal raisin cookies. She and her friends eat 24 of the cookies. What percent of the cookies did Lauren and her friends eat?
- 20%
  - 80%
  - 24%
  - 125%
10. Write 40% as a fraction.
- $\frac{4}{100}$
  - $\frac{1}{40}$
  - $\frac{4}{10}$
  - $\frac{1}{4}$
11. A shoe store is having a clearance sale. All shoes are 30% off the original price. Jason wants to buy a pair of shoes that originally cost \$44.99. How much will the shoes cost with the discount?
- \$32.02
  - \$43.64
  - \$31.49
  - \$13.50
12. Simplify  $2\frac{1}{2} \times 4\frac{2}{3}$ .
- $8\frac{1}{3}$
  - $11\frac{2}{3}$
  - $9\frac{1}{6}$
  - $8\frac{3}{5}$
13. Evaluate  $11 + (-7)$ .
- 4
  - 18
  - 4
  - 5
14. Which figure represents  $-7$ ?
- 
  - 
  - 
  - None of the above
15. Find 5% of 230.
- 11.5
  - 15
  - 46
  - 345
16. Evaluate  $(-8) \times (-4)$ .
- 32
  - 4
  - 32
  - 24
17. Evaluate  $7 - 3 + (-5)$ .
- 5
  - 1
  - 9
  - 15
18. Evaluate  $2.5 \times (-0.3)$ .
- 0.75
  - 0.0833
  - 0.65
  - 0.75
19. Evaluate  $(-64) \div 4$ .
- 64
  - 16
  - 60
  - 15

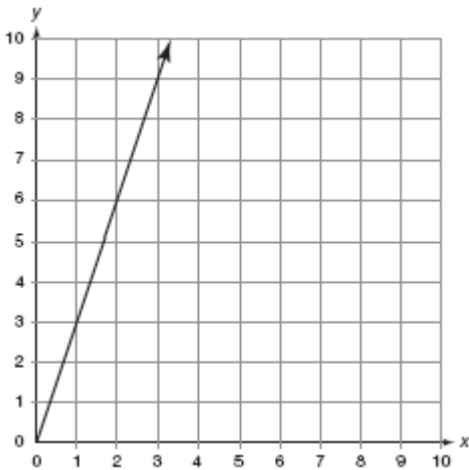
20. Which graph shows a line that contains all of the points in the table of ordered pairs?

$x$	$y$
3	1
6	2
9	3

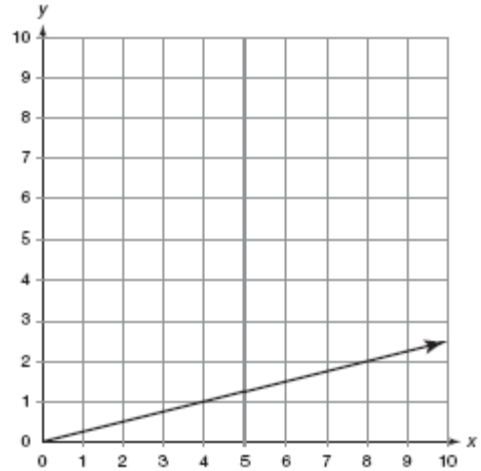
a.



b.



c.



d. None of the above.

21. The sum of a number  $n$  and 17 equals 56. Write an equation to show this relationship.

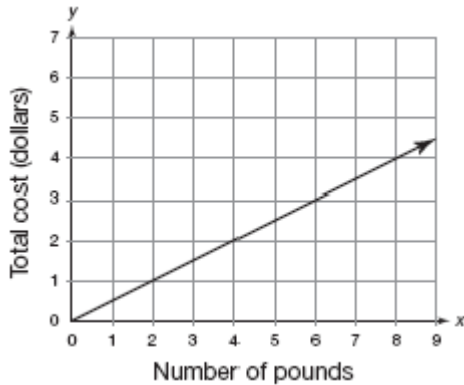
- a.  $56n = 17$
- b.  $17 + n = 56$
- c.  $17 - n = 56$
- d.  $56 + n = 17$

22. For large parties, a restaurant adds a 15% service charge to the bill. What amount would be added to a bill of \$163?

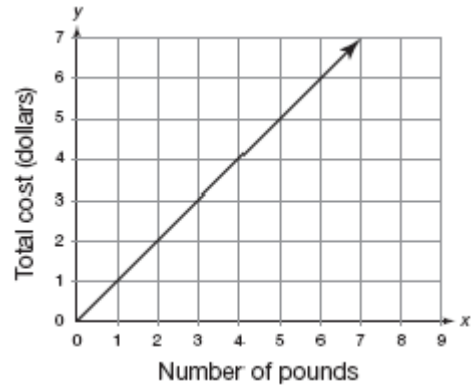
- a. \$15.00
- b. \$2.45
- c. \$24.45
- d. \$0.24

23. Tomatoes are on sale at a price of \$1 for 2 pounds. Which graph shows the relationship between the number of pounds of tomatoes purchased and the total cost?

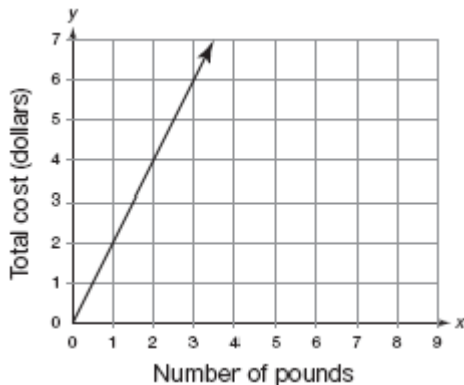
a.



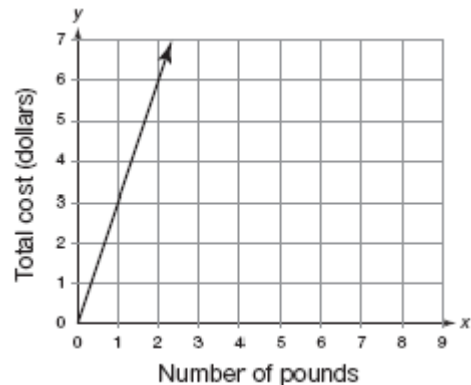
c.



b.



d.

**Short Answer**

Each answer is graded on the following rubric.

**4 pts - completely correct****3 pts - minor error(s)****2 pts - little understanding but work shown****1 pt - attempted problem with minimal understanding 0 pts - no response**24. Solve for  $x$ .

$$\frac{3}{7} = \frac{x}{21}$$

27. Solve for  $x$ .

$$\frac{4}{9} = \frac{x}{36}$$

25. At a high school, 548 students were surveyed and asked if they had a job. Of those surveyed, 342 were employed. What is the ratio of students employed to students unemployed?

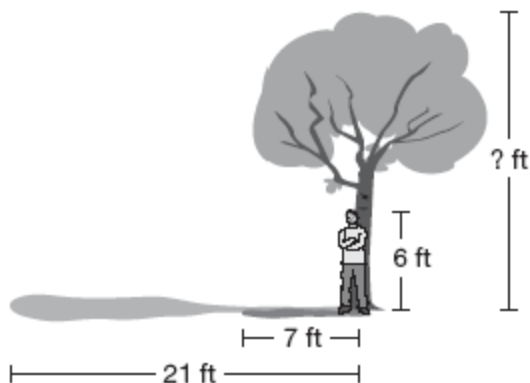
28. At a high school, 428 students were surveyed and asked if they brought their lunch to school. Of those surveyed, 214 brought their lunch to school. What is the ratio of students who brought their lunch to those who did not?

26. A motorist pays \$21.75 for 15 gallons of gas. How much does gas cost per gallon?

29. A motorist pays \$28.47 for 13 gallons of gas. How much does gas cost per gallon?

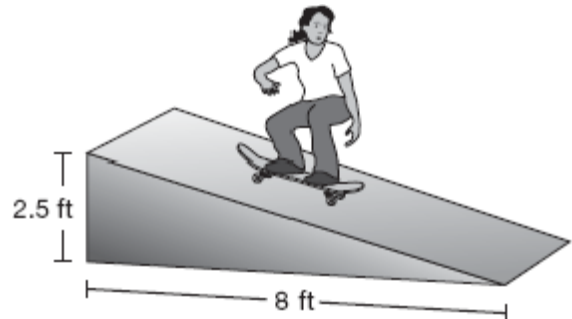
30. Miles per gallon (or mpg) is a common ratio that expresses the number of miles a car can travel on one gallon of gas.
- If Keith's car needs 13 gallons of gas to travel 286 miles, what is the car's mile per gallon ratio?
  - Keith and three friends are planning a road trip from Los Angeles, CA to San Francisco, CA. The trip is approximately 385 miles. How much gasoline should Keith expect to use?
  - If gas costs about \$2.19 per gallon, how much money should Keith and his friends budget for gasoline? Round your answer to the nearest dollar.
31. Hourly wages are the ratio of pay per hour worked. If Martin works 31 hours and receives a paycheck for \$302.25, what is his hourly wage?

32. Standing next to a large oak tree, Jon notices that his shadow is 7 feet long while the oak tree's shadow is 21 feet. If Jon is 6 feet tall, then how tall is the oak tree?



33. Write 25% as a fraction and as a decimal.
34. Write 50% as a fraction and as a decimal.

35. You can find the slope of a ramp by writing the ratio of the height of the ramp to the length of the ramp. Slope can be written as a fraction, as a decimal, or as a percent.

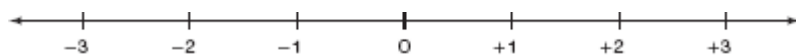


- Write the slope of the ramp as a fraction.
  - Write the slope of the ramp as a decimal.
  - Write the slope of the ramp as a percent.
36. Midway through the month of August, Keith gets a text message from his cell phone company telling him that he has used 85% of his allowed minutes for the month. If he is allowed 750 minutes every month, how many minutes does he have left for the rest of August? (The phone company rounds down to the nearest minute.)
37. Laura went out to lunch and the total cost of her lunch before tax was \$8.86. She would like to leave a 20% tip and there is a 7.8% tax. How much money will her total lunch bill be? (Tip and tax are each calculated from the base meal price.)
38. In 1999, the U.S. population was approximately 273 million. Projections for the year 2050 estimate that the population will have grown by 48%. What is the predicted population for the year 2050? Round your answer to the nearest million.

39. A new snowboarding jacket costs \$128.95.
- The sales tax is 8.25%. What is the total price of the jacket?
  - Next week the jacket will go on sale for 10% off. What will the total price be next week?  
Tax is calculated after the 10% discount.

40. Plot and label the numbers on the number line below.

$$1.5, -2\frac{1}{2}, -0.5, 0.5, \frac{5}{2}$$



41. Find the number described by each statement below.
- The number that is 7 more than  $-9$
  - The number that is 10 less than 6
  - The number that is 5 less than  $-4$
  - The number that is 5 more than  $-4$
42. Find each product or quotient.
- $(-5) \times (-3)$
  - $3 \times (-5)$
  - $(-15) \div (-3)$
  - $15 \div (-5)$
43. Write each number in scientific notation.
- 0.0098723
  - 877,000
44. Write each number in standard form.
- $2.5 \times 10^6$
  - $7.5 \times 10^{-4}$
45. Order the numbers below from least to greatest.  
 $-25, 3, 12, -12, 25$
46. Evaluate each expression.
- $3|8 - 4|$
  - $3|4 - 8|$
47. Evaluate each expression.
- $9|11 - 7|$
  - $9|7 - 11|$

48. The water level in a 100-gallon water tank drops 50 gallons and then drops another 20 gallons.

- Is the change in water level positive or negative?
- What is the total change in the water level?
- How much water is left in the tank?

49. Evaluate each expression.

- $(-9 + 3) \div 2 + 3$
- $[14 \div (-2)] \times [(-8) \div (-2)]$

50. The sum and product of two numbers are both positive. Are the two numbers positive or negative?

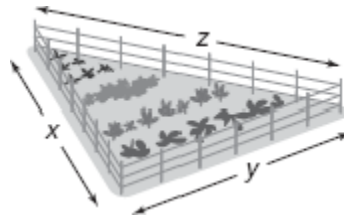
51. Evaluate each expression.

- $|-9 \div 3|$
- $|-9 \div (-3)|$
- $-|9 \div (-3)|$

52. At the start of a hiking trip the temperature is  $x$  degrees. At the end of the hiking trip the temperature is 7 degrees warmer.

- Write an expression to represent the temperature at the end of the hiking trip.
- Suppose that the temperature at the end of the hiking trip is 35 degrees. Write an equation to represent this situation.
- Solve the equation from part (b) to find the temperature at the start of the hiking trip.

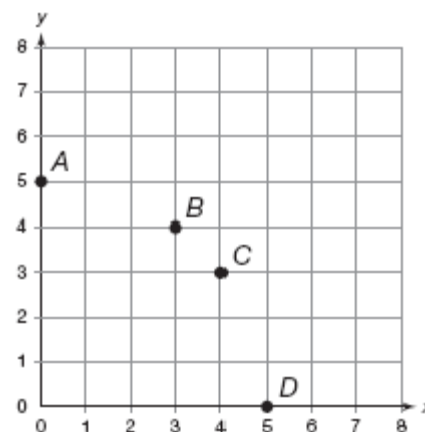
53. A triangular garden fence has side lengths of  $x$  meters,  $y$  meters, and  $z$  meters. Write an expression for the total length of fencing.



54. Evaluate each expression when  $x = -2$ .

- $4x + 8$
- $5 - \frac{1}{2}x$

55. Write the ordered pair that represents each point in the coordinate plane below.

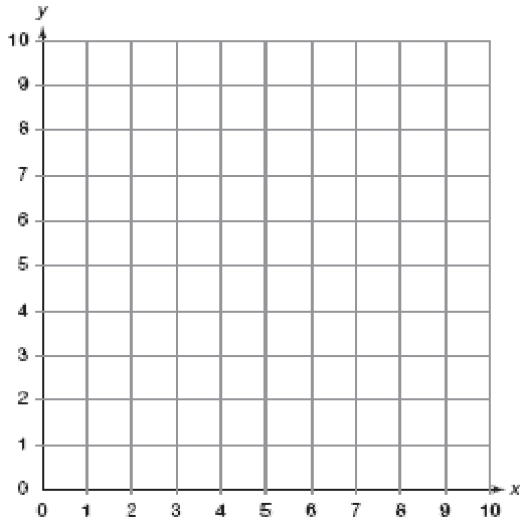


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56. Plot and label each ordered pair in the coordinate plane below.

(8, 1), (4, 5), (6, 4), (0, 8)



57. Solve each equation.

a.  $9x = 54$

b.  $x + 10 = 13$

c.  $x - 32 = 40$

d.  $\frac{x}{2} = 10$

58. Evaluate each expression when  $x = 3$ .

a.  $3x - 12$

b.  $\frac{1}{3}x + \frac{2}{3}$

c.  $15 - 2x$

d.  $-1.2x + 4.3$