

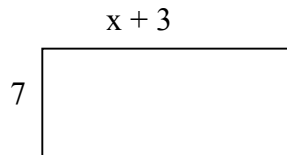
Eighth Grade
Math Mastery Assessment

1. _____ Jane has 3 times as many books as Sue and half as many as Bob. If Bob has 12 books, how many books does Sue have?

- a) 2 c) 8
b) 6 d) 18

2. _____ Use $a^2 + b^2 = c^2$ to solve.
Given a right triangle with a hypotenuse of 13ft. and a leg of 5ft. find the length of the other leg. Show your work.

3. _____ A rectangle has the following dimensions:



If the area of this rectangle is 112 square units, what is the value of x ?

4. _____ The square root of 16 plus the square root of 64 equals the square root of what number?

5. Which is the better buy, a 12oz box of cereal for \$2.69, or an 18oz box for \$3.99?
Explain your answer.

6. _____ Jake invited 36 friends to a party. If 26 of them showed up, which fraction is the best estimate for the number of invited friends who showed?

- a) $1/2$ c) $5/6$
b) $2/3$ d) $5/7$

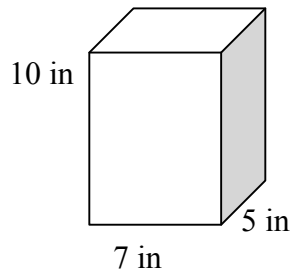
7. _____ If the Great American Ball Park has 82,000 seats, and 42% of the tickets for those seats were sold, how many tickets were sold?

- a) 40,500 c) 39,245
b) 50,064 d) 34,440

8. Using a protractor or angle ruler and a ruler, draw a right triangle with legs of 3 cm and 4 cm. Measure the hypotenuse.
- Drawing:
 - What is the length of the hypotenuse? _____
 - Use the Pythagorean Theorem to confirm your hypotenuse's measurement.

9. _____ Sally rides the bus to school each day, which takes 30 min. (1/2 hour). She lives 13.6 miles from school. What is the average rate that the bus is traveling?
- 40.8 mph
 - 6.8 mph
 - 27.2 mph
 - 45 mph

10. Find the surface area and volume of the following prism. Show your work.



Surface Area = _____

Volume = _____

11. If the key on a scale drawing of a house says 1 inch = 3 feet, how long (to the nearest inch) would a wall be in the house if it is drawn as $12 \frac{1}{4}$ inches on the drawing?

E. Find the upper and lower quartiles and the interquartile range of the data.

F. Draw a box-and-whisker plot of the data.

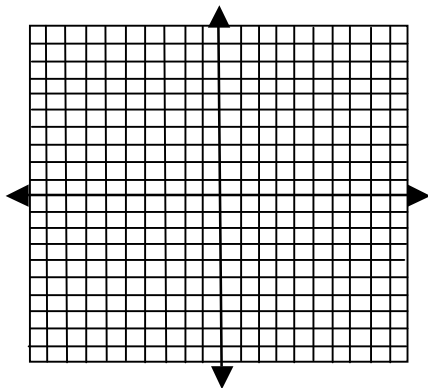
15. _____ In a bag of marbles, $\frac{5}{12}$ are red, $\frac{1}{3}$ are blue, $\frac{1}{6}$ are green, and $\frac{1}{12}$ are yellow. If a marble is taken from the bag without looking, what color is it most likely to be?
16. In the 2000 Presidential election, Gallop polled 50 Kentuckians as they left the voting booth. 33 said they voted for George W. Bush. Gallop predicted that 66% of Kentucky voters would vote for Bush. Was this an accurate way to predict a winner? _____
Defend your answer.
17. Four students, Alex, Brad, Charles, and David, are running a race. List all the different possible outcomes of the race. (For example, if the Alex comes in first, Brad second, Charles third and David fourth, you might list ABCD.) List all the other possible outcomes.
18. _____ A poll is being taken at Baker Middle School to determine whether to change the school mascot. Which of the following would be the best place to find a sample of students to interview that would be most representative of the entire student body?
a) An algebra class
b) The cafeteria
c) The guidance office
d) A French class
e) The faculty room
19. _____ True or False: If you pick one chip out of a bag and then pick out a second chip without replacing the first chip, drawing the second chip is independent of the first drawing.

20. 8th graders tossed 4 coins 40 times and listed their results. They got 3 heads and 1 tail 14 times.
- What is the experimental probability of 3 heads and 1 tail? _____
 - What is the theoretical probability of tossing 3 heads and 1 tail? _____ Show your work.
- c. Why might these be different?
21. Explain how you can distinguish a linear relationship from a nonlinear relationship. Give an example of both a linear relationship and a nonlinear relationship and show each with words, equations, tables and graphs.

22. _____ Evaluate the expression: $3a - 2(b + 9)$, where $a = 5$ and $b = 6$.

- | | |
|--------|-------|
| a) -15 | c) 15 |
| b) -10 | d) 30 |

23. Graph the solution to $y = \frac{6}{5}x + 7$ on a Cartesian (coordinate) plane. Show your work.

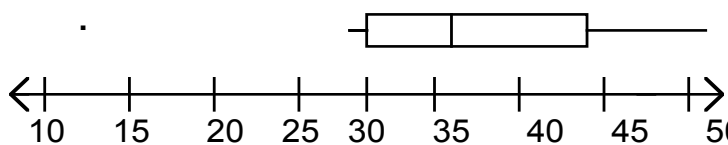


24. _____ A shirt is on sale for 25% off the original price, p . Which equation could you use to figure out the sale price, s , of the shirt?

- a) $p = s + 25$ c) $p = s + .25s$
b) $s = p - .25$ d) $s = p - .25p$

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Answer Key

1. a
2. 12ft
3. 13
4. 144
5. 18oz is a better buy. The 12 oz. cereal is \$.224 per oz. The 18 oz. cereal is \$.221 per oz.
6. d
7. d
8. Answers will vary.
9. c
10. Vol: 350 in^3 ; SA: 310 in^2
11. 37 ft.
12. b
13. 47.25 in^2
14. A. To find the mean add the number of students that attended each meeting, and then divide by 10.
 $(12 + 29 + 32 + 33 + 35 + 37 + 42 + 44 + 47 + 51)/10 = 362/10 = 36.2$
B. To find the median order the data from least to greatest and then find the mean of the middle two values.
 $(35 + 37)/2 = 72/2 = 36$
C. The data has no mode because no data value appears more often than any other data value. Mode means most often-occurring data value in the set.
D. To find the range, subtract the smallest data value from the greatest data value.
 $51 - 12 = 39$
E. UQ = 44
LQ = 32
IQR = 12
F.



15. red

16. No, the number polled is too small and is not a random sample.

17. A, B, C, D; A, B, D, C; A, C, B, D; A, C, D, B; A, D, B, C; A, D, C, B;
B, A, C, D; B, A, D, C; B, C, A, D; B, C, D, A; B, D, A, C; B, D, C, A;
C, A, B, D; C, A, D, B; C, B, A, D; C, B, D, A; C, D, A, B; C, D, B, A;
D, A, B, C; D, A, C, B; D, B, A, C; D, B, C, A; D, C, A, B; D, C, B, A
There are $4 \times 3 \times 2 \times 1$ or 24 ways to do this.

18. b

19. F-1st chip must be returned to the bag.

20. Experimental Probability is $14/40$ or $7/20$. Theoretical probability is $4/16$ or $1/4$. The experimental probability often differs from the theoretical probability, esp. with a small number of coin tosses.

21. A linear relationship can be shown with an equation of the form $y = mx + b$. It's graph is a line. Examples will vary.

22. a.

24. d