

Name: \_\_\_\_\_

## 1<sup>st</sup> Semester Exam Review – Accelerated Math 7

### Equations

- Simplify the expression.
  - $2(x - 9) + 4(x - 7)$
  - $12(x - 4) - 14(x + 9)$
- You receive \$52 for babysitting for 6 hours. Write an equation that would show how much you make per hour?
- Each story of a building is 12.4 feet tall. If the height of the building is 235.6 feet, write an equation to determine how many stories the building has?
- A car-rental company charges a flat fee of \$150 and \$0.25 per mile to rent a popular model of a sports-utility vehicle. If the total cost to rent the vehicle for a 5-day ski trip was \$650, how many miles were driven?
- After solving an equation, you have the following solutions, explain what each solution represents.
  - $5x = 0$
  - $-3 = 7$
  - $12 = 12$

6. Solve the equation. CHECK YOUR SOLUTION.

a.  $-3(5n - 8) = -6$

b.  $-22 + 5x = 8$

c.  $-n + 11 + 4n + 22 = -6$

d.  $11x - 18 = 5x + 12$

e.  $9n + 29 - 5n + 29 = 2$

f.  $19 - x = -8x - 9$

g.  $-15x = -5(3x + 7)$

h.  $-6(4x + 3) = 6(-4x - 3)$

i.  $5(x + 2) - 3x = 2(x + 5)$

j.  $-2(x + 1) = 2(x - 1)$

## Inequalities

7. Solve and graph the inequality  $m - 5 \geq 3$ .

8. Solve and graph the inequality  $4 > 7y - 3$ .

9. Sara has \$500 in her bank account and adds \$50 a month. Write an inequality to represent the number of months it will take her to have more than \$800.

# Probability

10. Define experimental probability and theoretical probability.

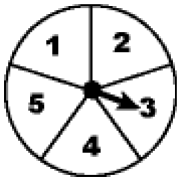
Experimental Probability:

Theoretical Probability:

11. When conducting an experiment, why would your experimental probability not be close to your theoretical probability?

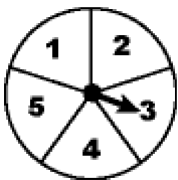
12. What is the theoretical probability of drawing an ace from a deck of cards? (there are 52 cards in a deck)

13. An experiment consists of spinning the spinner shown. All outcomes are equally likely. What is the probability that the spinner will land on a number less than 3? Express your answer as a fraction.



14. The vowels a,e,i,o,u are placed in a bag. What is the probability of drawing the letter c?

15. An experiment consists of spinning the spinner shown 50 times. All outcomes are equally likely. How many times would you expect to land on the number 4?

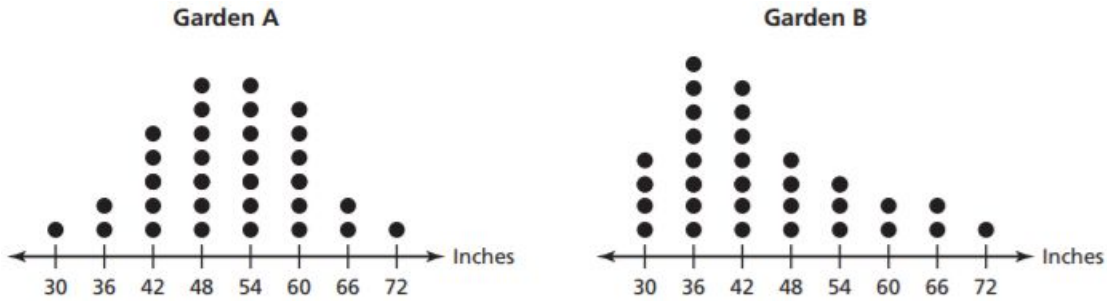


16. A spinner was spun 130 times. The outcome was red 20 times. What was the experimental probability of the spinner landing on red? Express your answer as a decimal rounded to the nearest hundredth. Then DESCRIBE the likelihood.
17. A jar contains 2 blue marbles, 1 black marble, and 5 green marbles. How many blue marbles need to be added so that the probability of drawing a green marble is  $\frac{1}{3}$ ?
18. A menu has 2 choices of meats (chicken or steak), 3 choices of vegetables (beans, peas, or carrots), and 2 choices of dessert (ice cream or cake). Use the Fundamental Counting Principle to find the probability of choosing a meal with chicken, beans, and cake.

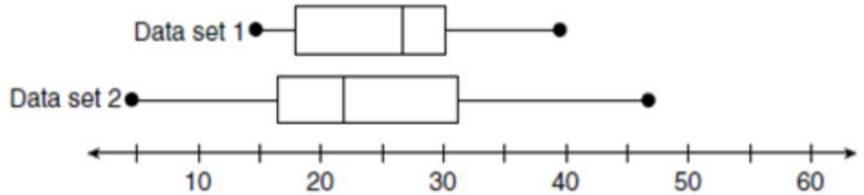
## Data Analysis

19. A newspaper wants to find out who is voting for Davis in the next election. Which procedure would be best for getting an unbiased, representative sample?
- a) Interview the chairperson of each neighborhood association.
  - b) Ask for all readers to phone in responses.
  - c) Call a random sample taken from a list of registered voters.
  - d) Post an advertisement asking people to send in responses.
20. The head of a sailing club wants to find out which tropical island is most popular with club members. Which procedure would be best for getting an unbiased, representative sample?
- a) Survey a random sample of club members from a list of all club members.
  - b) Interview one owner of each type of sailboat.
  - c) Place suggestion boxes at random locations around the docks.
  - d) Announce to all club members that comments are being taken

21. The dot plots show the heights of corn stalks in two gardens. Which measures of center and variation would best describe each set of data? (mean, median, MAD, IQR)



22. Use the box-and whisker plots to compare the data sets.



- Which data set has a larger median? \_\_\_\_\_
- Which data set has a larger range? \_\_\_\_\_
- Which data set has a larger Interquartile range (IQR)? \_\_\_\_\_

23. A survey found that 30 students in a random sample of 150 students at a local high school own an Ipod. The school has 1510 students. Predict how many students in the school own an Ipod.

24. In a sample of 150 students, 102 students said they had never been on an airplane. Based on this sample, predict how many of the 600 students in the school have never been on an airplane.

25. Fifty students were asked if they are in Spanish class and if they are in Advanced Language Arts. The results are in the two-way table below.

	In Spanish	Not in Spanish	Total
Advanced LA	12	8	
No Advanced LA		9	30
Total	33		50

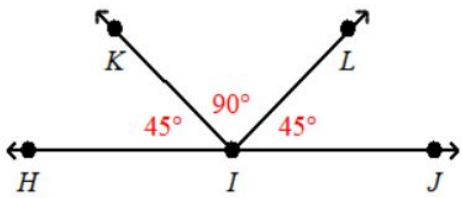
- a. How many students are in Spanish but not in Advanced Language Arts?
- b. What is the marginal relative frequency of students who are in Spanish Class?
- c. What is the marginal relative frequency of students who are not in Advanced Language Arts?
- d. What is the joint relative frequency of students in Spanish but not in Advanced Language Arts?
- e. What is the joint relative frequency of students who are in both Spanish and Advanced Language Arts?

## Angles and Triangles

26. Draw a figure that contains a pair of complementary angles. Label the complementary angles 1 & 2.

27. Draw a figure that contains a pair of vertical angles. Label the vertical angles 1 & 2.

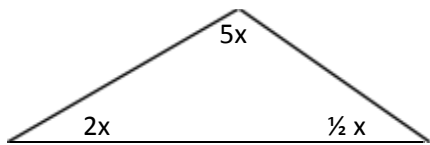
28. Name a pair of complementary angles and supplementary angles in the figure.



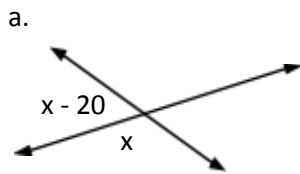
Complementary Angles: \_\_\_\_\_ and \_\_\_\_\_

Supplementary Angles: \_\_\_\_\_ and \_\_\_\_\_

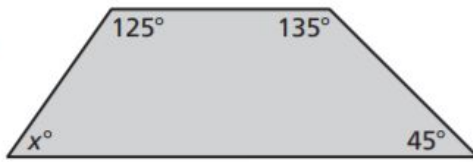
29. Find the value of  $x$ . Then classify the triangle by its angle measures.  
(The figure may not be drawn to scale.)



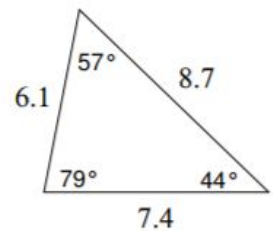
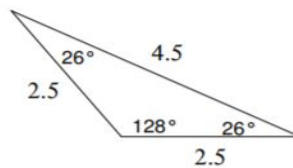
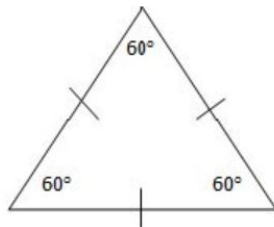
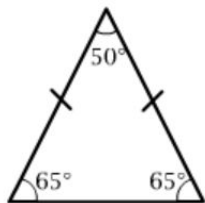
30. Find the value of  $x$ .



b.

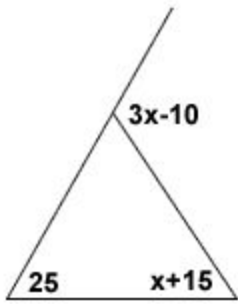


31. Classify the following triangles by angles and sides.





32. Find the value of  $x$ :

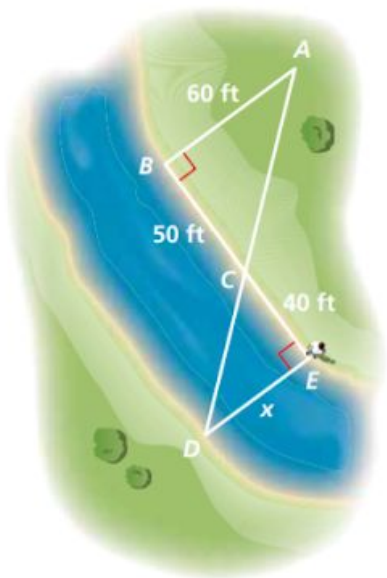


33. In a triangle, find the value of the remote exterior angle given the remote interior angles are 27 and 53 degrees.

34. Find the sum of the interior angles of a regular hexagon.

35. Find EACH individual measure of the angles in a regular 12-gon.

36. You plan to cross a river and want to know how far it is to the other side. You take measurements on your side of the river and make the drawing shown. What is the distance  $x$  across the river?



## Scales

37. A drawing of a corvette has a scale drawing of 1 in : 3.5 ft. What is the actual length of the corvette if the model length is 4 inches.
38. The scale drawing of a kitchen floor has a scale of 1 cm : 3 ft. The scale drawing of the kitchen floor is 3 centimeters by 4 centimeters. Find the perimeter and the area of the kitchen floor in the scale drawing. Then, find the actual perimeter and area of the kitchen floor.

Scale Drawing Perimeter = \_\_\_\_\_

Scale Drawing Area = \_\_\_\_\_

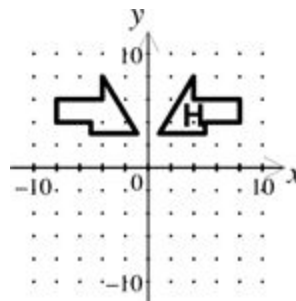
Actual Perimeter = \_\_\_\_\_

Actual Area = \_\_\_\_\_

## Transformations

39. The ratio of the corresponding side lengths of two similar figures is 3:5. The area of the smaller figure is 36 square inches. What is the area of the larger figure?

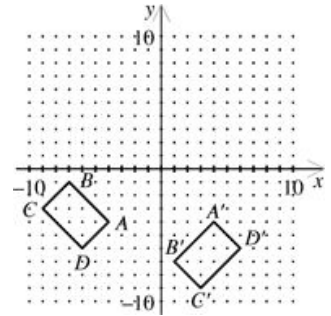
40. Name the type of transformation represented by the following:  
(the figure with the "H" is the image)



41. Identify the coordinates of the point (2, -5) after a rotation of  $180^\circ$  around the origin.

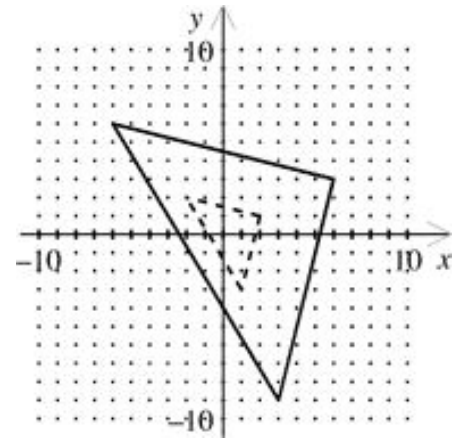
42. Which describes the relationship between the figures shown below?

- a. Figure  $A'B'C'D'$  is the image of figure  $ABCD$  under a  $90^\circ$  rotation clockwise about the origin.
- b. Figure  $A'B'C'D'$  is the image of figure  $ABCD$  under a  $45^\circ$  rotation counterclockwise about the origin.
- c. Figure  $A'B'C'D'$  is the image of figure  $ABCD$  under a  $180^\circ$  rotation about the origin.
- d. Figure  $A'B'C'D'$  is the image of figure  $ABCD$  under a  $90^\circ$  rotation counterclockwise about the origin.

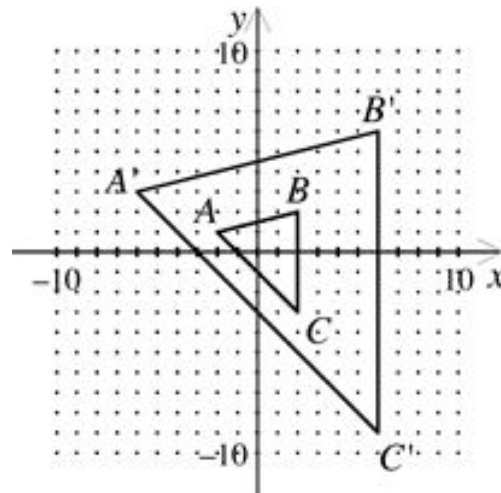


43. In a dilation, if the image is smaller than the original figure, then the dilation has a scale factor that is \_\_\_\_\_?

44. The dashed triangle is the image of the solid triangle formed by a dilation centered at the origin. Find the scale factor of the dilation.

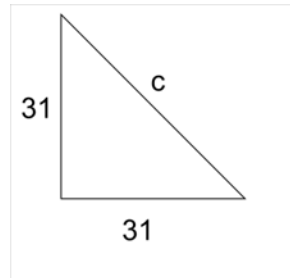


45. Find the scale factor of the dilation.



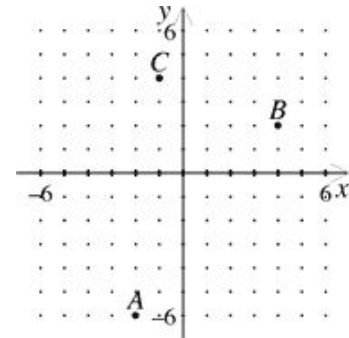
## Real Numbers and the Pythagorean Theorem

46. Find the length of the missing side.  
Round to the nearest tenth, if necessary.



47. A carpenter built a shelf at a right angle to the wall. A support beam under the shelf forms a triangle with the edge of the shelf and the wall. The support beam is 10 inches in length and attaches to the wall 6 inches below the shelf. Find the width of the shelf.

48. Find the distance from point  $C$  to point  $B$ .  
Keep your answer in radical form.



49. Write the decimal as a fraction or a mixed number.

a.  $-0.\overline{5}$

b.  $1.\overline{25}$

50. Simplify the expression.

a.  $\sqrt[3]{-125}$

b.  $5\sqrt[3]{729} - 24$

c.  $10 - 4\sqrt{\frac{1}{16}}$

## Review Answer Key

1. a.  $6x - 46$       b.  $-2x - 174$
2.  $6x = 52$
3.  $12.4x = 235.6$
4. 2,000 miles
5. a.  $x=0$               b. No solutions              c. Infinitely many solutions
6. a.  $n=2$               b.  $x=6$                       c.  $n=-13$                       d.  $x=5$   
    e.  $n=-14$           f.  $x=-4$                       g. No solutions              h. Infinitely many solutions  
    i. Infinitely many solutions          j.  $x=0$
7.  $m \geq 8$  (graph has closed circle at "8" and shades to the right)
8.  $y < 1$  (graph has open circle at "1" and shades to the left)
9.  $500 + 50x > 800$
10. Experimental:  $(\# \text{ of times the event occurs}) / (\text{total } \# \text{ of trials})$   
    Theoretical:  $(\# \text{ of favorable outcomes}) / (\# \text{ of possible outcomes})$
11. Not enough trials
12.  $\frac{1}{13}$
13.  $\frac{2}{5}$
14. 0
15. 10 times
16. 0.15 ; unlikely
17. 7 blue marbles
18.  $\frac{1}{12}$
19. C
20. A
21. Garden A: Mean, MAD  
    Garden B: Median, IQR
22. a. Data set 1              b. Data set 2              c. Data set 2
23. about 302 students
24. about 408 students
25. a. 21              b. 66%              c. 60%              d. 42%              e. 24%
26. (angles should add up to 90 degrees)

27. (vertical angles should be across from each other when 2 lines intersect)

28. Complementary: HIK and LIJ

Supplementary: HIL and LIJ OR HIK and KIJ

29.  $x=24$  ; obtuse triangle

30. a.  $x=100$       b.  $x=55$

31. acute isosceles ; equiangular equilateral ; obtuse isosceles ; acute scalene

32.  $x=25$

33.  $80^\circ$

34.  $720^\circ$

35.  $150^\circ$

36. 48 ft

37. 14 ft

38. Scale Perimeter = 14 cm ; Scale Area = 12 square cm

Actual Perimeter = 42 ft ; Actual Area = 108 square ft

39. 100 square inches

40. Reflection

41. (-2,5)

42. D

43. between 0 and 1

44.  $\frac{1}{3}$

45. 3

46. 43.8 units

47. 8 inches

48.  $\sqrt{29}$

49. a.  $-\frac{5}{9}$       b.  $1\frac{25}{99}$

50. a. -5      b. 21      c. 9