

Summer Practice. Alum Morales

1. You open up a shop in Hawaii and want to offer customers four days of extreme experiences. On the first 2 days the customer can choose a water activity: snorkeling, fishing and water skiing. The next 2 days, the customer can choose from more extreme activities: zip lining, sky diving, rock climbing, and cave exploring. In how many ways can a customer choose a water activity for the first 2 days and then another water activity for last 2 days?
  - a. 12
  - b. 7
  - c. 13
  - d. 4
  
2. Constance wants brand new carpet for her square-shaped bedroom. Her bedroom is 11 ft. by 11 ft. How much carpeting will Connie 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.
  
3. The Krispy Creme “donuts are ready” sign at three different Krispy Crème locations, lights up when the donuts are ready at every 10 minutes, 15 minutes and 20 minutes, respectively. If the time is 9:00 pm and donuts are ready at all three shops, how many minutes will it take for the signs to again light up at the same time?
  - a. 30 minutes
  - b. 40 minutes
  - c. 50 minutes
  - d. 60 minutes
  
4. In *Figure 1*, below, there are 3 out of 5 triangles shaded blue. In *Figure 2*, below, there are 6 out of 10 triangles shaded blue. What fraction represents the total blue shaded triangles between Figure 1 and 2?
  - a.  $\frac{6}{5}$
  - b.  $\frac{10}{12}$
  - c.  $\frac{9}{15}$
  - d.  $\frac{9}{10}$

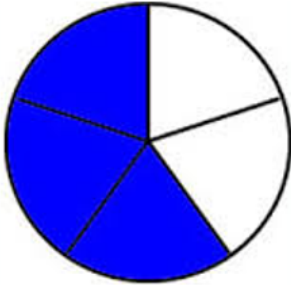


Figure 1

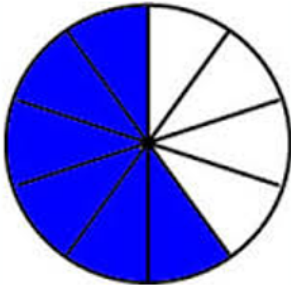
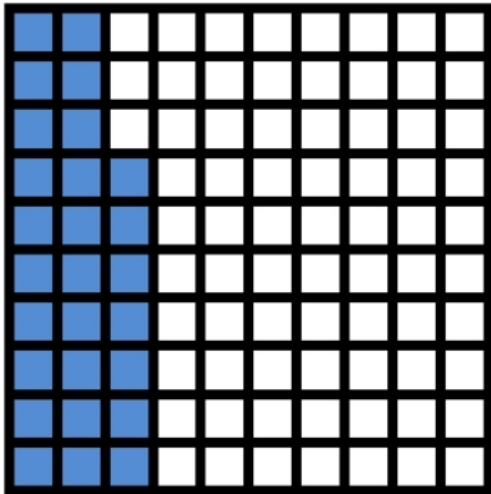


Figure 2



5. In *Figure 3*, above, the area of each square represents  $\frac{1}{100}$  of a square inch. As a decimal, which one of the following is true?

- Since the area of each square represents  $\frac{1}{100}$  of a square inch, then the portion of Figure shaded is representing 0.2 as an equivalent decimal.
- Since the area of each square represents  $\frac{1}{100}$  of a square inch, then the portion of Figure shaded is representing 0.27 as an equivalent decimal.
- Since the area of each square represents  $\frac{1}{100}$  of a square inch, then the portion of Figure shaded is representing 0.25 as an equivalent decimal.
- Since the area of each square represents  $\frac{1}{100}$  of a square inch, then the portion of Figure shaded is representing 0.23 as an equivalent decimal.

6. A lime sherbet punch can be made from 2 pints of lime sherbet and 4-liters of Ginger Ale. If I triple the lime sherbet, how many liters of Ginger Ale will be needed to make the punch?

- e. 10 liters
- f. 11 liters
- g. 12 liters
- h. 13 liters

7. The following prices for pecans are all in proportion except,

- i. \$2 per oz. equals \$6 per 3 oz.
- j. \$4 per 2 oz equals \$20 per 10 oz.
- k. \$9 per 4.5 oz equals \$36 per 18 oz.
- l. \$13 per 6 oz equals \$29 per 12 oz.

Percent

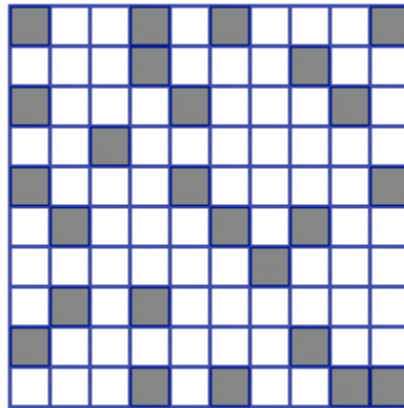


Figure 3

8. In Figure 4 above, what is the percent of unshaded blocks?

- m. 60%
- n. 65%
- o. 70%
- p. 75%

9. What is the discounted price for a pair of shoes that cost \$ 75.00, if the discount is 25%?

- q. \$55.00
- r. \$56.25
- s. \$57.50
- t. \$58.00

10. What is the original cost of a sofa if it has been discounted 40% and the amount after the discount is \$165.00?

- a. \$275.00
- b. \$660.00
- c. \$231.00
- d. \$412.50

#### Measurement

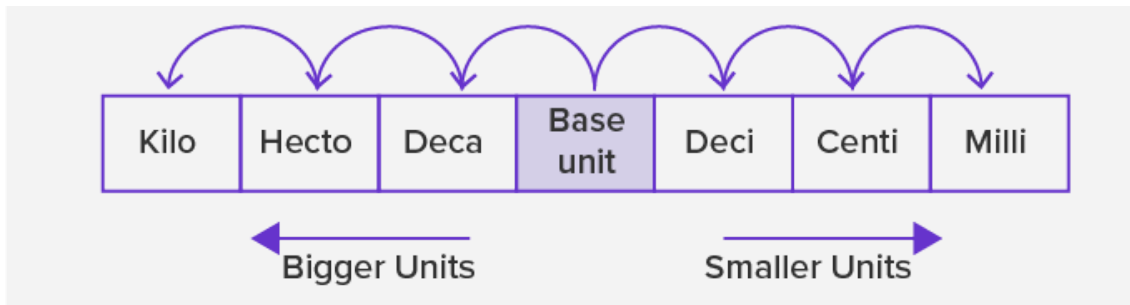


Figure 4

11. Figure 5, above, shows the relationship between metric prefixes. If the base unit is **meter**, convert 87,000 mm to km.

- e. 0.87 km
- f. 0.0087 km
- g. 0.087 km
- h. 0.00087 km

12. Laurence purchased a 200 ml bottle of juice and purchased a second 3-liter bottle of juice. What is the difference in liters between the two juice bottle amounts?

- i. 2.08 L
- j. 2.008 L
- k. 2.8 L
- l. 28 L



13. *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)

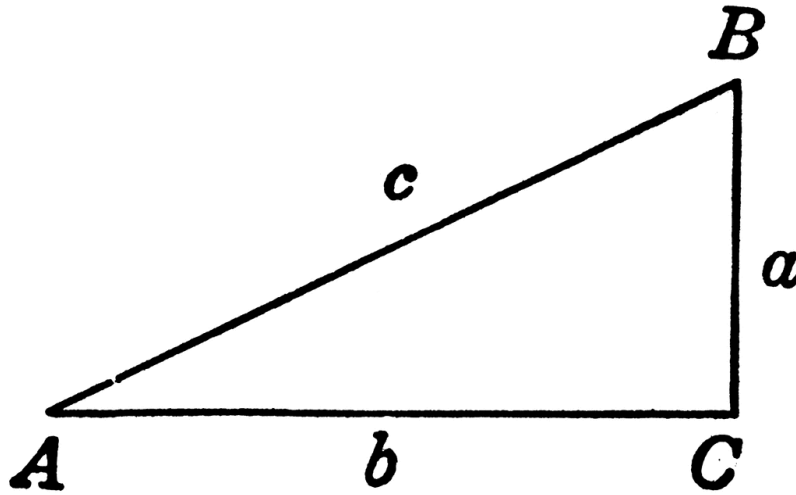
- a. 125 lbs.
- b. 26 lbs.
- c. 109 lbs.
- d. 59 lbs.

14. The circumference of a circle is given by the formula,  $c = \pi d$ , where  $\pi = 3.14$ . The radius of the tire of a Lexus is 17 inches. Find the circumference of the tire. Round your final answer to the nearest whole number.

- e. 227 inches
- f. 53 inches
- g. 907 inches
- h. 107 inches

15. Given the right triangle in *Figure 7* below, if  $a = 3$  ft and  $c = 5$  ft, find  $b$ , the missing side.

- a. 3.5 ft
- b. 2 ft
- c. 4 ft
- d. 16 ft



*Figure 5*

16. Evaluate:  $\sqrt{169}$

- a. 84.5
- b. -169
- c. 13
- d. 28,561

17. For *Figure 8* below, find the perimeter of the polygon.

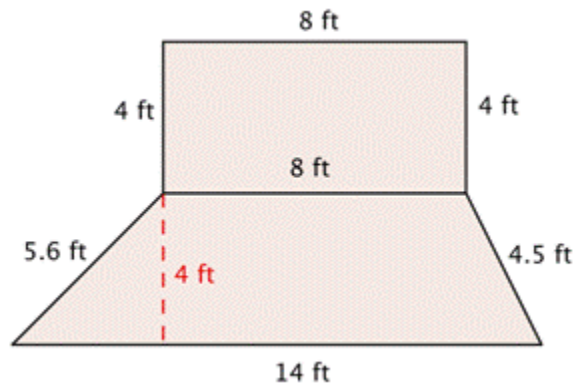


Figure 6

- a. 48.1 ft
- b. 52.1 ft
- c. 40.1 ft
- d. 76 ft

18. Simplify  $8(3^2 - 6) \div 4$

- a. 6
- b. 16.5
- c. 4
- d. 0

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

- a. 21
- b. -79
- c. -9
- d. 91

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

- a. 4/13
- b. 10
- c. 19
- d. 1/13

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

- a. -9
- b. 9
- c. 1
- d. -2

22. Simplify the expression  $\left(\frac{15}{6} - \frac{9}{6}\right) - \left(\frac{8}{9}\right)^0$ .

- a.  $1/9$
- b.  $-7/18$
- c.  $1$
- d.  $0$

23. Simplify  $-6^3$ .

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

24. The angle of elevation from a spot on the ground 30 feet from the base of a tree to the top of a tree is  $50^\circ$ . How tall is the tree? (Calculator).

25. Sam is standing at the top of a 75-foot tall building. He sees his friend standing on the ground at a location that is 100 feet from the base of the building. What is the angle of depression between Sam and his friend? (Calculator)

26. A large flagpole stands at the top of the Smythe Office Building. From the street at a point 100 feet from the base of the building, the angle of elevation to the top of the flagpole is  $55^\circ$ . The angle of elevation to the bottom of the flagpole is  $50^\circ$ . Find the height of the flagpole. (Calculator).

27. Given triangle ABC with  $m\angle A = 40^\circ$ ,  $b = 2$ ,  $a = 3$ , use Law of Sines to find the measure of angle B. Remember, there can be more than one answer!



# 28 -30: Use  $f(x) = x^4 + 5x^3 + 3x - 4$ .

28. Use synthetic substitution to find  $f(-3)$

29. Use synthetic division to divide  $f(x)$  by  $(x + 2)$ .

30. Is  $(x + 1)$  a factor of  $f(x)$ ?

#31 – 32: Identify the hole, vertical asymptote, horizontal asymptote, intercepts, and key points for each. **Graph on graph paper.**

31.  $f(x) = \frac{4x}{x-7}$

32.  $f(x) = \frac{x^2 + 2x - 35}{x+7}$

33. Use zeros, multiplicities, end behaviors, and key points to sketch a good graph of the function:  $f(x) = x^4 - 3x^3 + x^2 + 3x - 2$ . **Use graph paper.**

#34 – 35: Solve each inequality. Write answers in interval notation.

34.  $2x^2 - 5x < x + 8$

35.  $\frac{3x-5}{x+2} \geq 2$

36.] Write in logarithmic form:  $4^3 = 64$ .

37.] Write in exponential form:  $\log_7 b = 13$ .

# 38 -41: Solve for x

38.  $64 = 4^{(5x-3)}$

39.  $\log_2(x-6) + \log_2 x = 4$

40.  $e^{-0.097x} = 12$

41.  $3^{(x-1)} = 5^{2x}$

42. Write  $2\log_6 x - (3\log_6 y + \log_6 z)$  in condensed form.43. Write  $\log_4 \frac{x^3 y^2}{\sqrt{w}}$  in expanded form.# 44 – 46: Graph each on **graph paper**.

44.  $f(x) = 4^{-x}$

45.  $y = 3^x$

46.  $\log_3 x = y$

47. If \$2000 is invested at 4% interest, compounded continuously, how much will be in the account at the end of five years?

48. Solve: Determine the amount of money, P, that must be invested at a rate of 8% interest compounded quarterly so that the amount in the account, A, in 40 years will be \$200,000.

49. Solve: The spread of a virus through a population is modeled by the equation

$$y = \frac{1000}{1 + 990e^{-0.7t}},$$
 where y is the total number of people infected and t is time in days.

In how many days will 530 people be infected with the virus?

50. A certain number of bacteria doubles every 10 hours.

If there were 100 grams of bacteria at noon on day 1, how many bacteria will be present at midnight of the next day?