

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

Key

Date: \_\_\_\_\_

7ACL- Final Exam Review

1. John took a survey and found that the number of people who like country music is 20 out of 60. What is the experimental probability of liking country music? If 900 people were surveyed, how many would like country music?

$$\frac{20}{60} = \frac{1}{3} \quad \frac{1}{3} = \frac{x}{900} \quad \frac{3x}{3} = \frac{900}{3}$$

$$\boxed{x = 300}$$

2. A rectangle has side lengths of  $(x+10)$  and  $(6x-4)$ . Find the perimeter in simplified form. Then factor out the expression.

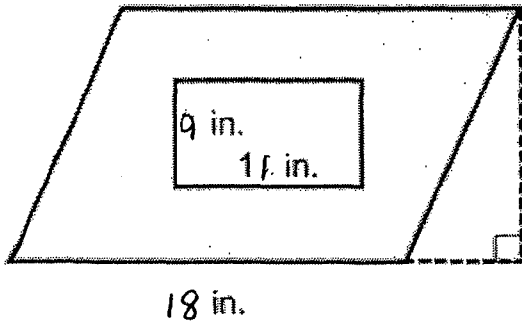
$$6x-4 \quad x+10$$

$$P = 6x-4 + x+10 + 6x-4 + x+10$$

$$\boxed{P = 14x + 12}$$

$$\boxed{\text{Factored: } 2(7x + 6)}$$

3. Find the area of the shaded region.



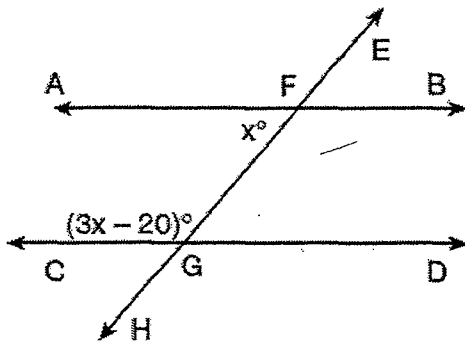
$$A = bh \quad A = lw \quad A = 180$$

$$A = 18(10) \quad A = 9(11) \quad - 99$$

$$A = 180 \quad A = 99 \quad \boxed{A = 81 \text{ in}^2}$$

- 4.

In the accompanying diagram,  $\overline{AB} \parallel \overline{CD}$ ,  $\overline{EFGH}$  is a transversal,  $m\angle AFG = x$ , and  $m\angle CGF = 3x - 20$ . Find the value of  $x$ .



$$x + 3x - 20 = 180$$

$$4x - 20 = 180$$

$$+20 \quad +20$$


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$$4x = 200$$

$$\frac{4x}{4} = \frac{200}{4}$$

$$x = 50$$

5. Melissa wants to join a yoga class. There is an initiation fee of \$19.99 and each month of membership costs \$12.50. If Melissa pays \$169.99, write and solve an equation to determine how long his membership will last.

$$\begin{array}{r}
 19.99 + 12.50x = 169.99 \\
 -19.99 \qquad \qquad -19.99 \\
 \hline
 12.50x = 150.00 \\
 \frac{12.50x}{12.50} = \frac{150.00}{12.50}
 \end{array}$$

$x = 12$  months  
 she can work out for 12 months

6. Graph the line and identify the slope and y-intercept.

$$\begin{array}{r}
 -2x + y = -1 \\
 -2x \qquad \qquad -2x \\
 \hline
 \text{slope } -2 \qquad y = -2x - 1
 \end{array}$$

y-intercept  $-1(0, -1)$

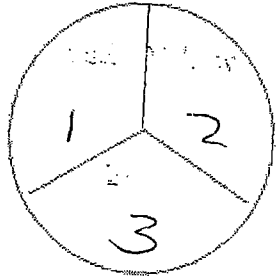
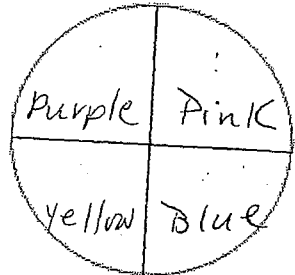
$$\begin{array}{r}
 y - x = 5 \\
 +x \qquad +x \\
 \hline
 \text{slope } 1 \qquad y = x + 5
 \end{array}$$

y-intercept  $5(0, 5)$

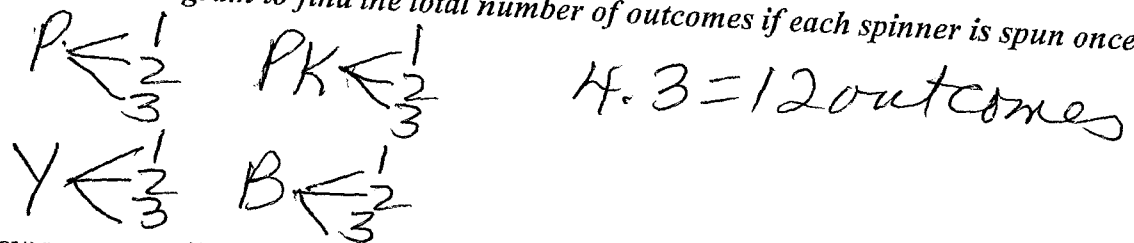
7. Mrs. DeLuca bought four books for her daughter at \$3.00 each. She had a coupon for 5% off. The sales tax was  $8\frac{1}{4}\%$ . Determine the total cost after the discount and sales tax are applied.

$$\begin{array}{l}
 \text{Price } 4(3) = 12 \\
 \text{dis } 12(.05) = .60 \\
 \text{Sale Price } 12 - .60 = 11.40 \\
 \text{tax } 11.40(.0825) = .9405 \\
 \text{Total } 11.40 + .94 = 12.34
 \end{array}$$

8.



(a) Draw a tree diagram to find the total number of outcomes if each spinner is spun once.



(b) How many possible outcomes there are if each spinner is spun once?  $12$

(c) Find  $P(\text{odd number, Purple})$

$$\frac{1}{4} \cdot \frac{2}{3} = \frac{2}{12} = \frac{1}{6}$$

(b) The Earth is approximately 810,000,000 miles from the sun.

1) Write this distance in scientific notation.

$$8.1 \times 10^8$$

2) If the speed of light is  $1.72 \times 10^8$  miles per second, how long does it take light from the sun to reach the earth? Express the answer in standard form.

$$(8.1 \times 10^8) (1.72 \times 10^4) = 1.3932 \times 10^{13}$$

9. There are 8 students on the track team. In how many ways can the coach set up the starting lineup of 4 players?

$${}^8P_4 \quad \underline{8} \cdot \underline{7} \cdot \underline{6} \cdot \underline{5}$$
$$\underline{1680}$$

10. Jessica's weekly earnings are described by the equation  $y = 4x + 50$ , where  $x$  is the number of hours he works. If Jessica earned \$250 one week, how many hours did she work?

$$y = 4x + 50$$
$$250 = 4x + 50$$
$$\frac{200}{4} = \frac{4x}{4}$$
$$\boxed{50 = x}$$

11. Solve  $x^3 = 125$

$$\sqrt[3]{125} = 5$$

12. A necklace that normally sells for \$75 is on sale for \$50. What is the percent of discount for the sale price?

$$\frac{50}{75} = \frac{x}{100}$$
$$\frac{75x}{75} = \frac{5000}{75}$$
$$x = 66 \frac{2}{3} \%$$

13. What is the result when the expression  $(5x - 2)$  is subtracted from  $(-8x + 1)$ ?

$$(-8x + 1) - (5x - 2)$$
$$-13x + 3$$

14. Name the following properties:  $a + (b + c) = (a + b) + c$   
 $6 + (-6) = 0$

associative add  
inverse add

15. Evaluate:  $(2x^2y^3)^4$

$$16x^8y^{12}$$

16. A sandwich shop has four types of meat, three types of cheese, and two types of bread. How many different sandwiches, consisting of one type of meat, one type of cheese, and one type of bread, does the sandwich shop serve?

17. Factor :  $20x - 12$

18. The triangles shown are similar triangles.

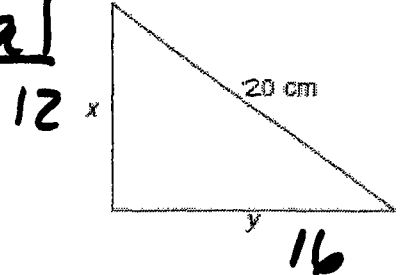
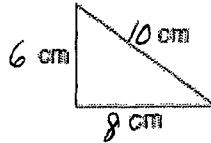
Find the value of  $x$  and  $y$ .

$$\frac{6}{x} = \frac{10}{20} \quad \frac{10}{20} = \frac{8}{y}$$

$$10x = 120 \quad 10y = 160$$

$$x = 12 \quad y = 16$$

Proportional



19. A diamond ring is on sale for \$900. If this price represents a 15% discount from the original price, what was the original price of the ring?

$$\frac{900}{x} = \frac{85}{100} \quad 85x = \frac{90000}{85} \quad x = \$1058.82$$

20. What does the sum of supplementary angles equal?  $180^\circ$

What does the sum of complementary angles equal?  $90^\circ$

21. To which of the following numbers does  $\sqrt{100}$  NOT belong?

- a. real numbers   b. rational numbers   c. irrational numbers   d. integers

22. Gina solved 20 math problems during a 42-minute math class. At this rate how many problems would she solve in 126 minutes?

$$\frac{20}{42} = \frac{x}{126} \quad \frac{42x}{42} = \frac{252}{42} \quad x = 6 \text{ problems}$$

23. If the measures of two angles of a triangle are  $62^\circ$  and  $84^\circ$  find the missing angle.

$$180 - (62 + 84) =$$

$$180 - 146 = 34^\circ$$

24. A photo with a length of 4 inches and a width of 6 inches is enlarged to poster size. The poster and the photo are similar. The length of the poster is 32 inches. What is the width of the poster?

$$\frac{4}{6} = \frac{32}{x} \quad \frac{4x}{4} = \frac{192}{4} \quad x = 48 \text{ inches}$$

25. Two supplementary angles are in the ratio 2:3. Find the measure of both angles.

$$2x + 3x = 180 \quad x = 36 \quad 2x = 72^\circ$$

$$5x = 180 \quad 3x = 108^\circ$$

26. What is another word for the constant of proportionality?

Slope   rate of change