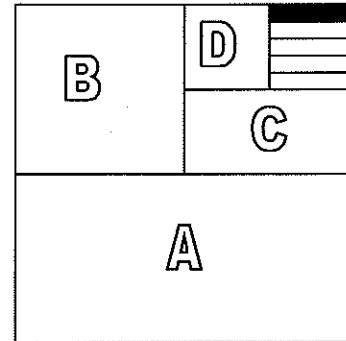


Pre-Algebra 8
Summer Packet

Directions: Please read all questions carefully. Show all of your work! Unless specified, calculators are permitted.

1) Use the picture to answer the following questions.

- a) Region C is what fraction of the whole square?
- b) Region D is what fraction of Region A?
- c) The shaded region is what fraction of Region B?



- 2) Jessica is raising money for charity by selling candles. She sells three candles for \$9.99.
 - a) Jessica's mother purchased 9 candles. How much money did her mother spend?
 - b) Jessica's sister only wants to buy 1 candle. How much should Jessica charge her sister?
 - c) For every 1 candle sold, \$2.50 goes to charity. What percentage of the price for one candle goes to charity?
- 3) On her way to South Carolina, Ashley drove 560 miles on the highway. This trip on the highway took her about 10 hours. She used about 20 gallons of gas on this trip? Show your work.
 - a) On the highway, how many miles per hour was she driving?
 - b) How many miles to the gallon does Ashley's car get?

- 4) Insert the correct sign ($<$, $>$, or $=$) between the two numbers to make a true statement. Show the math you used to compare the two numbers.

a) 0.865 ____ $5/7$

b) 32% ____ $6/13$

c) $2/5$ ____ $3/8$

- 5) Replace the question mark with a number that makes the equation true (creating equivalent fractions).

a) $\frac{6}{?} = \frac{24}{28}$

b) $\frac{3}{?} = \frac{24}{32}$

c) $\frac{6}{9} = \frac{?}{12}$

? = _____

? = _____

? = _____

- 6) A bucket contains 20 pencils. Some are red, some are blue, and some are yellow. The probability of drawing a red pencil is 65%. The probability of drawing a blue pencil is 15%.

a) What is the probability of drawing a yellow pencil?

b) How many pencils of each color are in the bucket?

- 7) Stephanie made a miniature model that is mathematically **similar** to a rectangular building. The miniature model has dimensions of 11cm by 6cm by 25cm.

a) The building's actual dimensions are 275ft by 150ft by 625ft. What is the scale factor from the miniature model to the actual building?

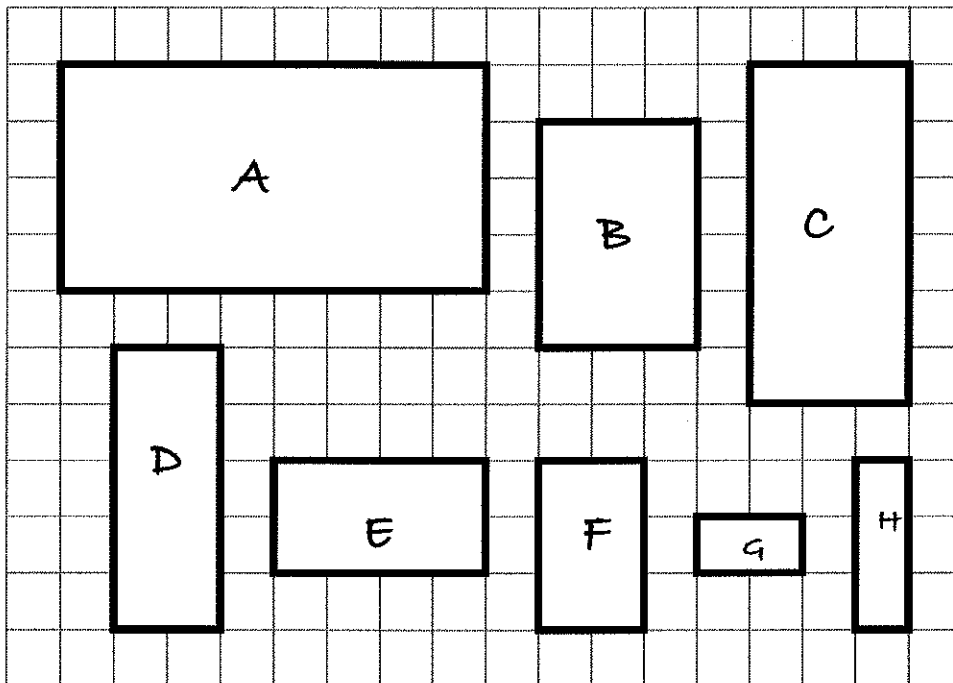
b) Stephanie wants to make a larger model. She decides she will make another model similar to the miniature model. She wants the length and width to be 33cm and 18cm. If the new model is similar to the old one, what is the height of the new model?

8) When Jane Smith grows up she wants to have three children. If she has girls, their names will be Gina (1st born), Grace (2nd born), and Gabby (3rd born). If she has boys, their names will be Brett (1st born), Bill (2nd born), and Bobby (3rd born). Jane is hoping for all girls.

a) List all of the possible combinations of boys and girls if Jane actually has three children.

b) What is the probability that Jane will have all girls?

9) Circle the three rectangles that are mathematically similar to Rectangle A.



Explain how you know they are similar. _____

10) Bethany went on a family vacation to South Carolina. During the first four hours, she recorded the total distance traveled every half hour.

- How many miles per hour was Bethany's family travelling?
- How many miles would Bethany's family travel in 6 hours?
- How long would it take to travel 315 miles?
- Write an equation that would determine the distance, d , for any amount of time, t .
- Use your equation to determine the distance traveled after 3.25 hours.

Bethany's Trip	
Time (hrs)	Distance (miles)
0	0
0.5	35
1	70
1.5	105
2	140
2.5	175
3	210
3.5	245
4	280

11) To answer each question, use the appropriate formula. Show all of your work and label all answers.

- The radius of a circle is 4cm. What is the area? What is the circumference?
- The area of a rectangle is 24 square inches and its width is 3in. What is the length of the rectangle? What is the perimeter of that rectangle?
- What are the possible dimensions of a rectangular prism with a volume of 12 cubic feet?
- Find the surface area of a rectangular prism with dimensions of 4 by 5 by 6.
- If a can has a radius of 3in and a height of 8in, what is the surface area?
- Find the volume of an ice-cream cone with a radius of 2.5 inches and a height of 7 inches.

Important Formulas

Area

$$\text{Rectangle} = L \times W$$

$$\text{Triangle} = \frac{1}{2} \times \text{Base Length} \times H$$

$$\text{Circle} = \pi r^2$$

Perimeter = the distance around a shape.

Circumference

$$\text{Circle} = d\pi \quad (\text{diameter} = 2r)$$

Volume

$$\text{Rectangular Prism} = L \times W \times H$$

$$\text{Cylinder} = \pi r^2 H$$

$$\text{Cone} = \frac{1}{3} (\pi r^2 H)$$

$$\text{Sphere} = \frac{2}{3} (\pi r^2 H)$$

Surface Area

$$\text{Rectangular Prism} = 2(L \times W + L \times H + W \times H)$$

$$\text{Cylinder} = 2\pi r^2 + d\pi H$$

NON CALCULATOR!

12) Find the sum.

a) $-17 + 31 =$

c) $-31 + 44 =$

e) $-9 + -19 =$

b) $-42 + 10 =$

d) $-50 + -48 =$

f) $-2 + 19 =$

13) Find the difference.

a) $-29 - 40 =$

c) $-11 - 4 =$

e) $-2 - -12 =$

b) $-35 - 20 =$

d) $-75 - -50 =$

f) $7 - 12 =$

14) Find the product.

a) $-11 \cdot 4 =$

c) $-5 \cdot 4 =$

e) $-9 \cdot -9 =$

b) $-30 \cdot 4 =$

d) $-15 \cdot -5 =$

f) $-\frac{1}{2} \cdot \frac{3}{4} =$

15) Find the quotient.

a) $-88 \div 4 =$

c) $-48 \div 4 =$

e) $-9 \div -9 =$

b) $-100 \div 20 =$

d) $-15 \div -5 =$

f) $-\frac{1}{4} \div \frac{1}{2} =$

16) Evaluate each of the expressions if the value of $x = 5$ and $y = -2$. Show your work.

a) $\frac{1}{2}(x + y)$

b) $x^2 + y^3$

c) $5x + 4y$

17) Solve each equation for the value of n . Show your work.

a) $-5n = 45$

b) $80 + n = 60$

c) $4n + 5 = -7$

18) Plot the points on the coordinate graph. Label each point with the correct letter.

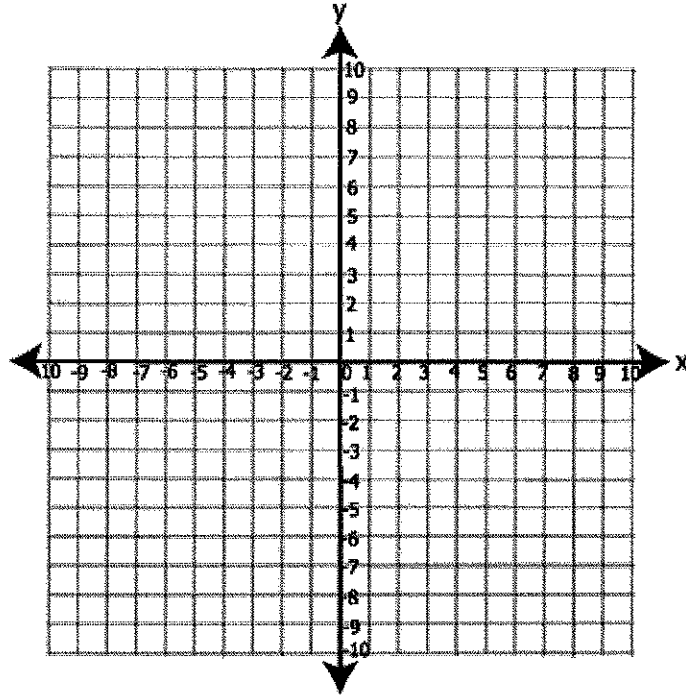
a) (0, -9)

b) (-8, 8)

c) (-6, 1)

d) (7, -6)

e) (5, 0)



19) The following table shows how the two variables are related. Find a pattern in each table. Use the pattern to complete the missing entries. Express the rule for the pattern as an equation, using the given letters as variables.

X	0	1	2	3	A	8	20
Y	0	7	14	21	28	B	C

A = _____ B = _____ C = _____ Equation: _____