DISTRICT OF COLUMBIA
PUBLIC SCHOOLS
Office of the Chief Academic Officer

Summer 2010

Mathematics Summer Learning Packet

Grades 6 - 8

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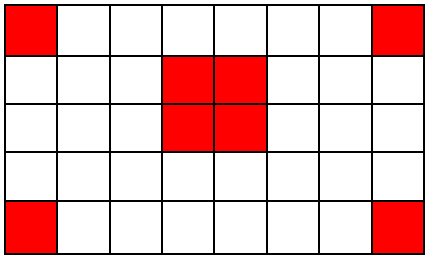
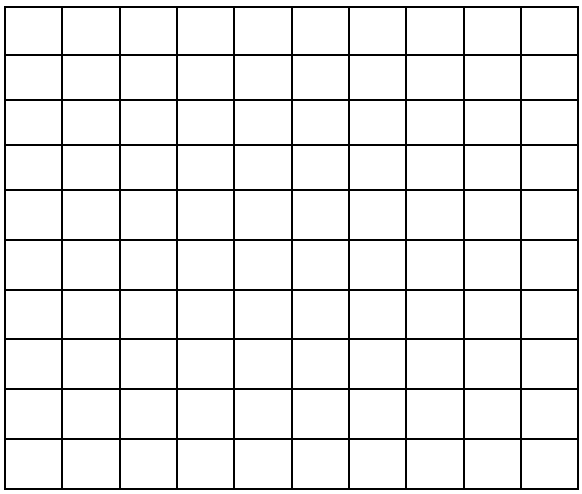
1. Fractions and Decimals



a) What fraction of the boxes are shaded?

b) How would you represent the fraction above as a decimal? _____

c) Shade exactly 62.5% of the grid below.



d) How would you represent the percentage above as a decimal? _____

2. More With Rational Numbers

a) Rename each decimal as a fraction in simplest form.

- 0.05 = _____
- 0.6 = _____
- 0.75 = _____
- 0.20 = _____

b) Arrange the decimals in order from least to greatest.

7.00 0.7 0.007 0.07 0.0007

_____

c) Compare the fractions using <, >, or =.

$\frac{8}{12}$ ◯ $\frac{3}{4}$ $\frac{5}{8}$ ◯ $\frac{6}{10}$ $\frac{2}{3}$ ◯ $\frac{5}{6}$ $\frac{3}{9}$ ◯ $\frac{4}{12}$

3. Prime Factorization

Write each number as the product of its prime factors. Use exponents to show multiples of a factor.

a) 32 _____

b) 72 _____

c) 60 _____

d) 180 _____

4. Factors and Multiples

Write the *greatest common factor* of 32 and 48. Show your work.

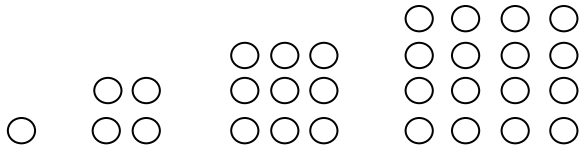
G.C.F. = _____

What is the *least common multiple* of 32 and 48. Show your work.

LCM = _____

5. A Close Look at Patterns

Study the pattern below. How many circles are needed in the next group of this pattern?



_____

Explain how you determined the next group of circles:

_____
_____
_____
_____
_____
_____
_____
_____
_____

6. What Comes Next?

Write the next five letters in this pattern:

C, E, C, D,D, C, E, C, D, D, C, ____, ____, ____, ____, ____

7. What's the Rule?

Study this pattern: **38, 47, 56, 65, 74, 83, …**

Write an algebraic expression to describe the rule for this pattern.

_____

8. Function Machine

IN	OUT
6	13
17	35
10	21
3	7
15	?

What is the rule for this function machine? _____

What is the missing number? _____

9. Solving Equations

Find the value of each variable.

a) $23 + n = 156$ $n =$ _____

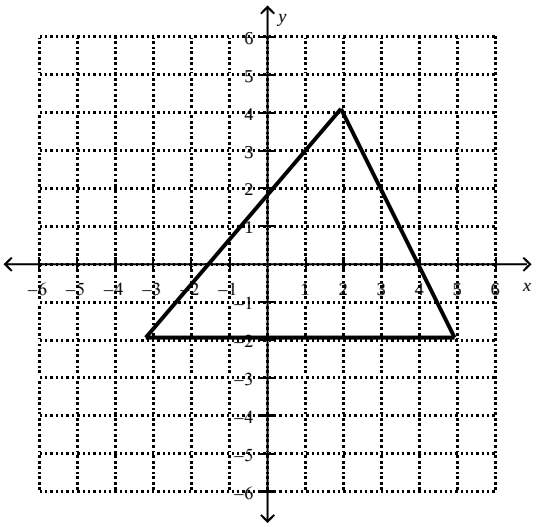
b) $\frac{b}{3} = 12$ $b =$ _____

c) $12 \times p = 120$ $p =$ _____

d) $232 - m = 68$ $m =$ _____

e) $8^2 + r = 100$ $r =$ _____

10. Coordinate Plane



a) Label the vertices of the triangle as A, B, and C.

b) Write the coordinates for the vertices.

A (___, ___)

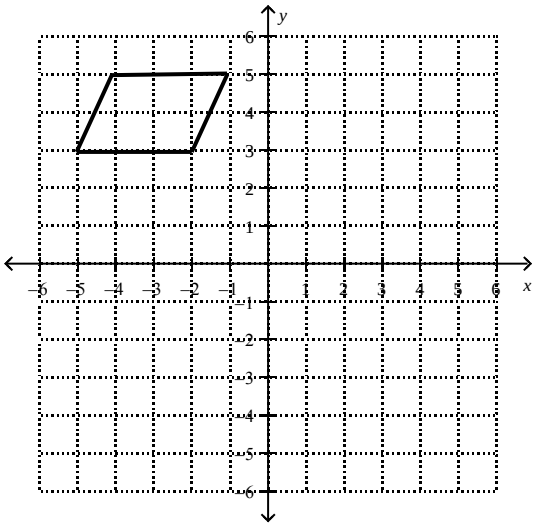
B (___, ___)

C (___, ___)

11. Transformations

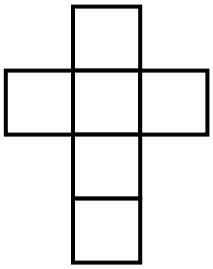
Label the parallelogram A, B, C, and D. Draw a reflection or flip of the figure below. Write the coordinates of both figures.

Work Space

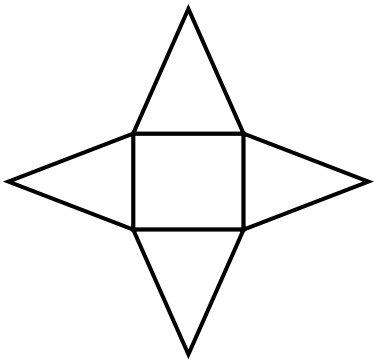


12. Nets

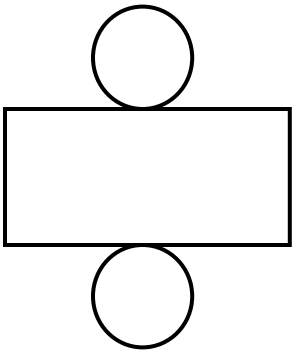
A.



B.



C.



What type of solid figure is represented by the nets shown above?

A _____

B _____

C _____

13. Triangular Prism

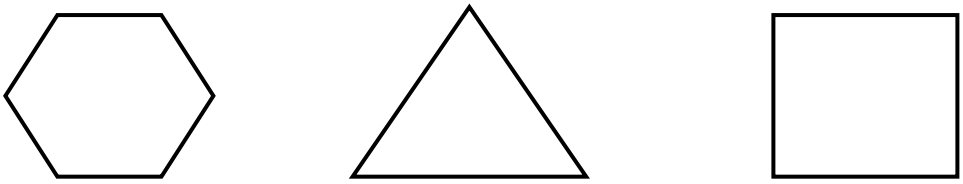
How many—

a) faces? _____

b) edges? _____

c) vertices? _____

14. Perimeter



regular hexagon **equilateral triangle** **square**

Each polygon above has a perimeter of 48 units. What is the length of the sides of each polygon? Explain your thinking.

_____

_____

_____

_____

_____

_____

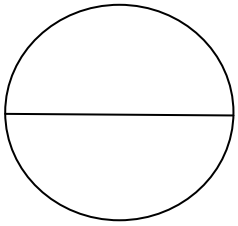
_____

15. Circumference

Find the circumference of the circle.

$C = 2\pi r$

Use $\pi = 3.14$



diameter = 12 units

Work Space

16. Area

Two groups of 6th grade students are planning to paint posters that are rectangular in shape. One poster is 9 inches in length and 4 inches in width. The other poster is 12 inches in length and 3 inches in width. Which poster has the larger area? Explain.

_____

_____

_____

_____

_____

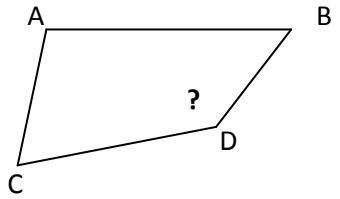
_____

_____

_____

17. Angle Measures

The sum of the angles in a quadrilateral is 360°. Find the measure of the missing angle.



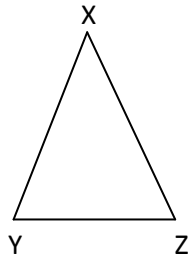
$\angle A = 92°$

$\angle B = 38°$

$\angle C = 88°$

$\angle D =$ _____

Triangle XYZ is an isosceles triangle. Find the measure of $\angle Z$.



$\angle X = 44°$

$\angle Z =$ _____

18. Stem-and-Leaf Plot

Ms. Cole's 6th grade class completed a unit math test. The scores are listed below.

92, 88, 90, 77, 100, 92, 90, 80, 92, 84, 100, 88,

68, 84, 86, 92, 90, 96, 80, 86, 94, 84, 68, 80

Create a stem-and-leaf plot to represent the data. Be sure to give your graph a title.

19. Probability

A bag contains 6 red blocks, 3 blue blocks, 2 green blocks, and 1 orange block. If you reach in the bag to randomly pull out a block, what is the probability you will select a blue block? Simplify your answer if you need to.

Work Space

20. Maximum, Minimum, and Range

What are the maximum, minimum, and range of the following data?

Average Temperature in October

DAY	TEMPERATURE
1	52°
2	48°
3	48°
4	50°
5	44°
6	56°
7	41°
8	62°
9	58°
10	55°

maximum _____ minimum _____ range _____

21. Mean, Median, and Mode

Find the mean, median, and mode of the data above.

Work Space