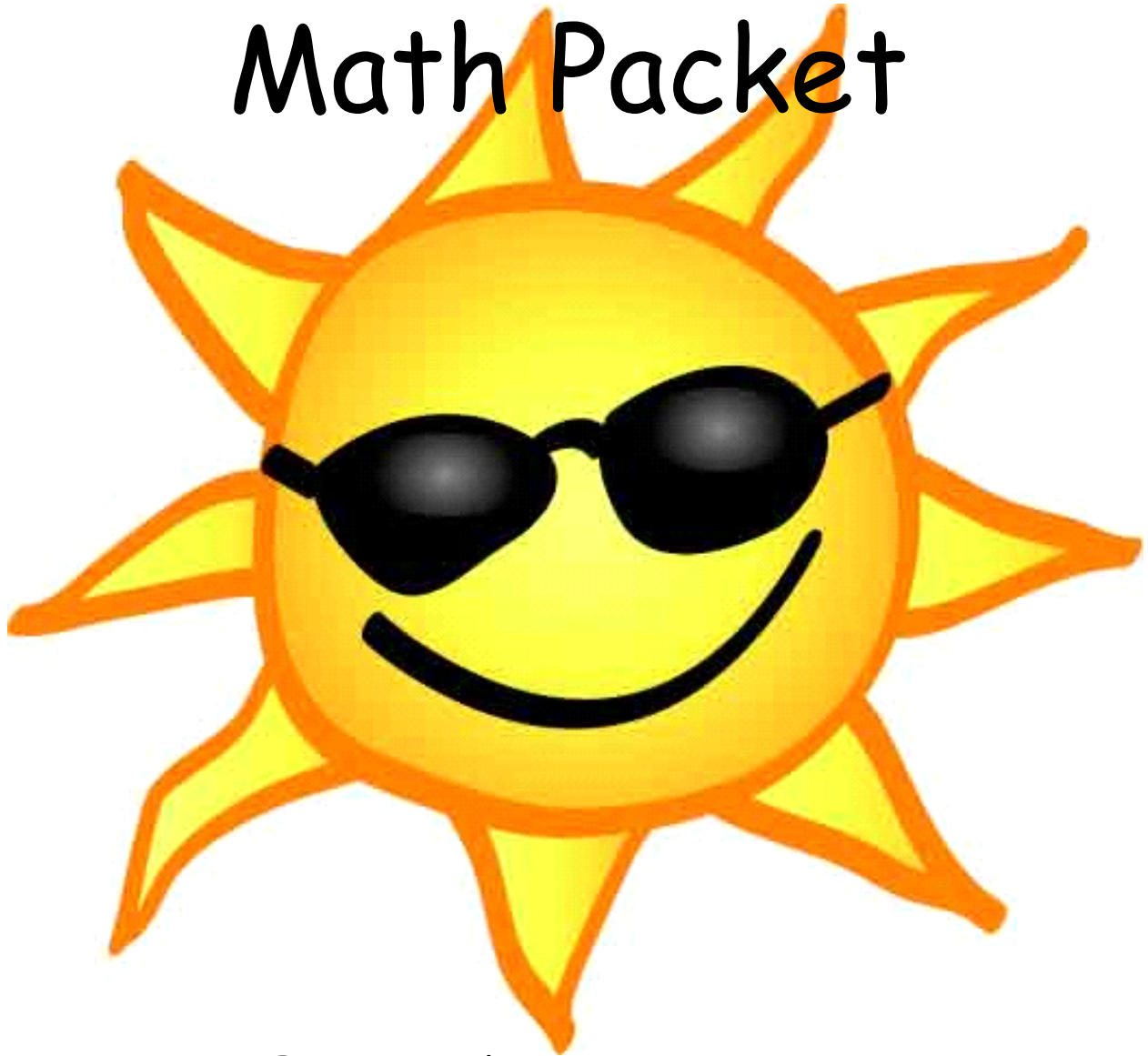# Summer

Math Packet

For students entering:

Enriched Math 6/Accelerated Math

Name: _____

Concepts students should know before entering 6th Grade Enriched/Accelerated:

Students should be advanced at these concepts:

Long Division

Directions: Complete the following problems. NO CALCULATOR! SHOW ALL WORK!!

1. $\begin{array}{r} 619 \\ 5\overline{)3,095} \\ -30 \\ \hline 09 \\ -\ 5 \\ \hline 45 \\ -45 \\ \hline 0 \end{array}$	**2.** $3\overline{)1,530}$	**3.** $12\overline{)6,036}$
4. $9\overline{)4,581}$	**5.** $7\overline{)5,425}$	**6.** $8\overline{)7,424}$
7. $3\overline{)2,424}$	**8.** $11\overline{)2,288}$	**9.** $6\overline{)5,442}$
10. $8\overline{)5,656}$	**11.** $3\overline{)1,560}$	**12.** $4\overline{)3,204}$

Division Word Problems

Directions: Solve each of the following problems. NO CALCULATORS!! SHOW ALL WORK!

1. Oliver played 2 rounds of a trivia game and scored 982 points. If he gained the same number of points each round, how many points did he score per round?	2. Roger has 365 baseball cards in 5 binders. If each binder has the same number of cards, how many cards are in each binder?
3. Chloe had 472 video games. If she placed the games into 8 different stacks, how many games would be in each stack?	4. An ice machine had 480 ice cubes in it. If you were filling up 8 ice chests and each chest got the same number of cubes, how many ice cubes would each chest get?
5. Faye is making bead necklaces. She has 606 beads and is making 2 necklaces with each necklace using the same number of beads. How many beads will each necklace use?	6. There are 545 students in a school. If the school has 5 grades and each grade had the same number of students, how many students were in each grade?

Mixed Numbers & Improper Fractions

Directions: Convert the following improper fractions to mixed numbers. Write your answer on the line next to each problem.

1) $\frac{9}{4} =$ $2\frac{1}{4}$	6) $\frac{11}{5} =$ _____	11) $\frac{71}{10} =$ _____
2) $\frac{82}{9} =$ _____	7) $\frac{61}{6} =$ _____	12) $\frac{29}{7} =$ _____
3) $\frac{31}{5} =$ _____	8) $\frac{7}{3} =$ _____	13) $\frac{55}{6} =$ _____
4) $\frac{13}{3} =$ _____	9) $\frac{50}{7} =$ _____	14) $\frac{21}{10} =$ _____
5) $\frac{29}{7} =$ _____	10) $\frac{17}{4} =$ _____	15) $\frac{25}{4} =$ _____

Directions: Convert the following improper fractions to mixed numbers. Write your answer on the line next to each problem.

1) $5\frac{1}{3} =$ $\frac{16}{3}$	6) $2\frac{1}{2} =$ _____	11) $9\frac{1}{5} =$ _____
2) $2\frac{1}{8} =$ _____	7) $3\frac{1}{4} =$ _____	12) $6\frac{1}{2} =$ _____
3) $3\frac{1}{4} =$ _____	8) $6\frac{1}{10} =$ _____	13) $5\frac{4}{9} =$ _____
4) $3\frac{2}{9} =$ _____	9) $5\frac{7}{10} =$ _____	14) $9\frac{2}{3} =$ _____
5) $9\frac{3}{8} =$ _____	10) $9\frac{1}{2} =$ _____	15) $2\frac{3}{8} =$ _____

Simplifying Fractions

Directions: Simplify the following fractions.

$\dfrac{4}{6} = \dfrac{2}{3}$	$\dfrac{2}{10} = \underline{}$	$\dfrac{21}{28} = \underline{}$	$\dfrac{10}{15} = \underline{}$	$\dfrac{6}{18} = \underline{}$
$\dfrac{4}{8} = \underline{}$	$\dfrac{16}{20} = \underline{}$	$\dfrac{7}{14} = \underline{}$	$\dfrac{6}{15} = \underline{}$	$\dfrac{12}{20} = \underline{}$

Adding Fractions

Directions: Solve the following problems. NO CALCULATOR! Put your answers in simplified form.

1. $\dfrac{4}{7} + \dfrac{10}{21} =$ $\dfrac{12}{21} + \dfrac{10}{21} = \dfrac{22}{21} = 1\dfrac{1}{21}$	2. $\dfrac{8}{9} + \dfrac{1}{3} =$	3. $\dfrac{11}{6} + \dfrac{4}{9} =$
4. $\dfrac{6}{12} + \dfrac{12}{4} =$	5. $\dfrac{4}{5} - \dfrac{7}{10} =$	6. $\dfrac{8}{11} + \dfrac{12}{5} =$
7. $\dfrac{10}{3} - \dfrac{2}{12} =$	8. $\dfrac{11}{6} + \dfrac{1}{10} =$	9. $\dfrac{3}{5} - \dfrac{6}{11} =$

Adding Fractions

Directions: Solve the following. NO CALCULATORS!! Show all work and simplify your answer!

$$1\frac{2}{5} + 3\frac{6}{7} = 5\frac{9}{35}$$

Rewrite as improper fractions

$$1\frac{+\,2\,\to 7}{\times\, 5} + 3\frac{+\,6\,\to 27}{\times\, 7}$$

Find least common denominator

$$\frac{7}{5}\,\frac{\times 7}{\times 7} + \frac{27}{7}\,\frac{\times 5}{\times 5}$$

$$\frac{49}{35} + \frac{135}{35} = \frac{184}{35} = 5\frac{9}{35}$$

1. $$3\frac{1}{4} + 4\frac{1}{2} =$$

2. $$2\frac{5}{6} + 5\frac{4}{7} =$$

3. $$2\frac{3}{5} + 6\frac{1}{4} =$$

4. $$4\frac{2}{3} + 4\frac{1}{6} =$$

5. $$3\frac{1}{2} + 3\frac{1}{5} =$$

6. $$23\frac{1}{2} - 18\frac{1}{6} =$$

7. $$19\frac{1}{2} - 4\frac{4}{5} =$$

Multiplying Fractions

Directions: _Solve the following. NO CALCULATORS!! Simplify your answer._

Example: $\frac{2}{3}$ **x 5 = ?**

| make the whole number a fraction | $\frac{5}{1}$ | multiply the top numbers (numerators) | **2 x 5 = 10** | multiply the bottom numbers (denominators) | **3 x 1 = 3** | write your result | $\frac{10}{3}$ |

1. $3 \times \frac{2}{9} =$	2. $4 \times \frac{3}{15} =$	3. $2 \times \frac{9}{19} =$
4. $6 \times \frac{3}{24} =$	5. $2 \times \frac{2}{5} =$	6. $1 \times \frac{5}{5} =$
7. $5 \times \frac{1}{7} =$	8. $10 \times \frac{1}{16} =$	9. $3 \times \frac{4}{9} =$
Example: $\frac{4}{5}$ **x** $\frac{2}{8}$ **= ?** multiply numerators / multiply denominators $\frac{4 \times 2}{5 \times 8} = \frac{8}{40} = \frac{1}{5}$ reduce → final answer	10. $\frac{3}{6} \times \frac{3}{2} =$	11. $\frac{20}{40} \times \frac{2}{2} =$
12. $\frac{4}{7} \times \frac{5}{8} =$	13. $\frac{2}{6} \times \frac{6}{2} =$	14. $\frac{5}{10} \times \frac{2}{1} =$
15. $\frac{5}{25} \times \frac{4}{1} =$	16. $\frac{15}{17} \times \frac{6}{6} =$	17. $\frac{9}{9} \times \frac{1}{1} =$

Fractions

Directions: Solve each problem. SHOW ALL WORK!! NO CALCULATORS!!

Cupcakes Challenge: Practice Fractions

Aunt Marie needs help figuring out how much of each ingredient she will need to buy in order to make this cupcake recipe. Can you help her?

Recipe			She has...		She needs...
All purpose flour	$4\frac{1}{3}$	cups	$\frac{2}{3}$	cup	
Sugar	$3\frac{3}{4}$	cups	$\frac{6}{8}$	cup	
Baking powder	4	teaspoons	$\frac{6}{5}$	teaspoons	
Milk	2	cups	$1\frac{1}{6}$	cups	
Vanilla	6	teaspoons	$2\frac{3}{6}$	teaspoons	
Eggs	2		0		

More challenge!

This recipe is for 12 people. If Aunt Marie wanted to cut the recipe in half, how much of each ingredient would it call for?

All purpose flour

Sugar

Baking powder

Milk

Vanilla

Eggs

Adding & Subtracting Decimals

Directions:Solve the following. DO NOT USE A CALCULATOR!!

Example 1 Add Decimals

Find the value of 3.9 + 2.45.

STEP 1 Rewrite the problem vertically
in order to align the decimal
points in each number. Add a
zero to 3.9 as a placeholder.

$$\begin{array}{r} 3.90 \\ +\ 2.45 \\ \hline \end{array}$$

STEP 2 Begin by adding the digits
in the hundredths place.

$$\begin{array}{r} 3.90 \\ +\ 2.45 \\ \hline 5 \end{array}$$

STEP 3 Add the digits in the
tenths place. Since
9 + 4 = 13, regroup
10 tenths as 1 one.

$$\begin{array}{r} \overset{1}{3}.90 \\ +\ 2.45 \\ \hline 35 \end{array}$$

STEP 4 Place the decimal point
in the answer. Add the
digits in the ones place.

$$\begin{array}{r} \overset{1}{3}.90 \\ +\ 2.45 \\ \hline 6.35 \end{array}$$

3.9 + 2.45 = 6.35

Example 2 Subtract Decimals

Find the value of 8.6 − 4.55.

STEP 1 Rewrite the problem vertically
in order to align the decimal
points in each number. Add a
zero to 8.6 as a placeholder.

$$\begin{array}{r} 8.60 \\ -\ 4.55 \\ \hline \end{array}$$

STEP 2 Begin by subtracting the
digits in the hundredths place.
Regroup 1 tenth as 10 hundreds
so that you can subtract.

$$\begin{array}{r} 8.\overset{5\ 10}{\cancel{6}\cancel{0}} \\ -\ 4.55 \\ \hline 5 \end{array}$$

STEP 3 Subtract the digits in the
tenths place.

$$\begin{array}{r} 8.\overset{5\ 10}{\cancel{6}\cancel{0}} \\ -\ 4.55 \\ \hline 05 \end{array}$$

STEP 4 Place the decimal point in
the answer. Subtract the
digits in the ones place.

$$\begin{array}{r} 8.\overset{5\ 10}{\cancel{6}\cancel{0}} \\ -\ 4.55 \\ \hline 4.05 \end{array}$$

8.6 − 4.55 = 4.05

1. 4.59 + 1.02	2. 9.04 − 6.32	3. 5.8 + 0.26
4. 6.5 − 3.7	5. 0.4 + 8.61	6. 3.28 − 1.09
7. 5.7 + 4.63	8. 6.3 − 2.99	9. 8.07 + 0.86
10. 7.2 − 5.98	11. 7.02 + 7.3	12. 5.33 − 2.68

Multiplying & Dividing Decimals

Directions: Solve the following problems. NO CALCULATOR! Show all work!

1.	2.	3.	4.
$\begin{array}{r} 63.9 \\ \times \quad 7.0 \\ \hline \end{array}$	$\begin{array}{r} 88.6 \\ \times \quad 5.01 \\ \hline \end{array}$	$0.6\overline{)0.228}$	$0.84\overline{)0.2268}$

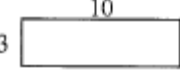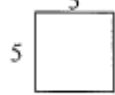|	
5. Diana paid $35 for 10 kilograms of raisins. She put half of the total mass of the raisins into Pack A and the other half into Pack B. Diana sold Pack A for $4.50 per kilogram and Pack B for $5.50 per kilogram. Diana sold all of the raisins. How much money did she make?	6. A ball of fine thread cost $1.65 per meter for the first 20 meters and $0.95 for each additional meter. Jesse bought 32 meters of the thread. How much did she pay for the thread?

Reading a Line Graph
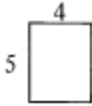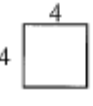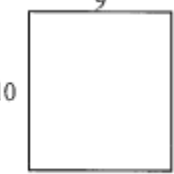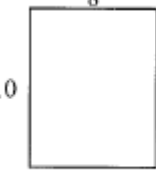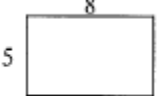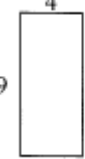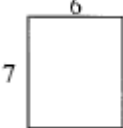
Directions: The graph below shows the number of fish caught in a day. Use the graph to answer the questions.

Fishing Trip Results
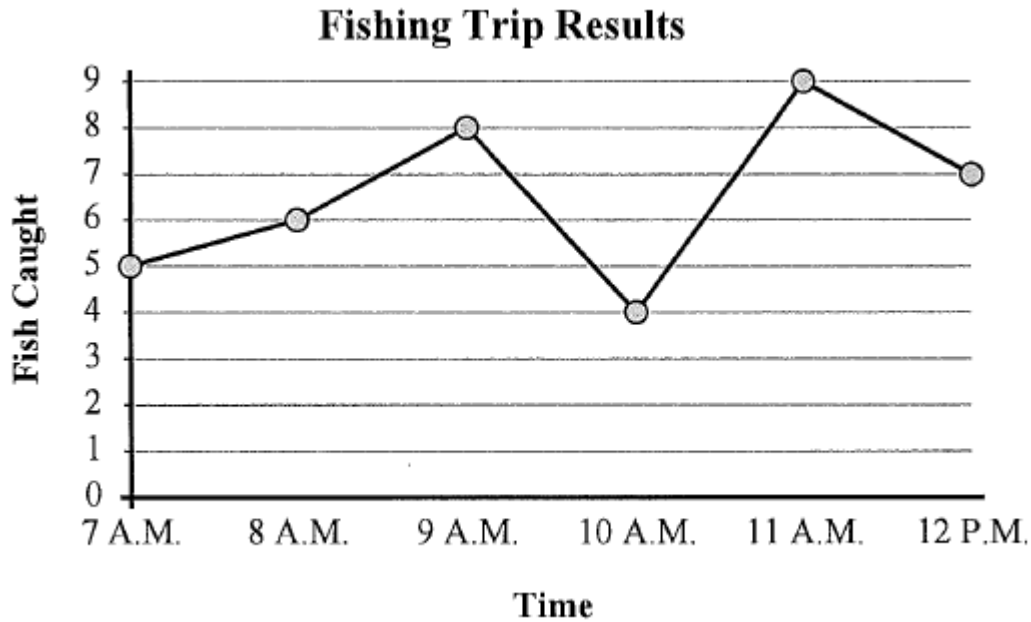
1) What time were the most fish caught? _____

2) What time were the fewest fish caught? _____

3) From 11 A.M. to 12 P.M. did the number of fish caught increase or decrease? _____

4) How many fish were caught at 9 A.M.? _____

5) How many fish were caught at 10 A.M.? _____

6) Were more fish caught at 10 A.M. or 11 A.M.? _____

7) Were fewer fish caught at 9 A.M. or 10 A.M.? _____

8) What is the difference in the number of fish caught at 9 A.M. and the number caught at 12 P.M.?

_____

9) What is the total number of fish caught? _____
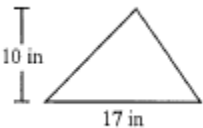
10) Were there at least 5 caught at 8 A.M.? _____
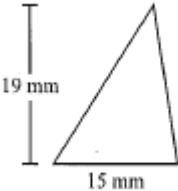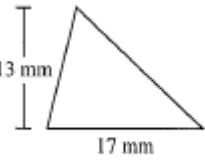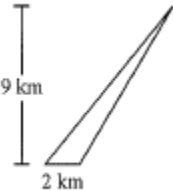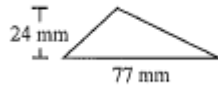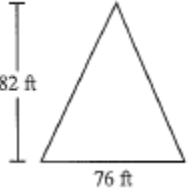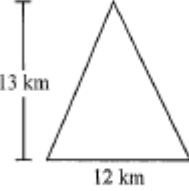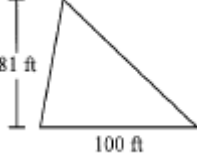
Finding Area & Perimeter of Rectangles

*Directions: Find the **perimeter** & **area** of the shapes below. All work must be shown!! Please follow the example problems for work we expect.*

4, 5 rectangle	$A = bh$ $A = 4(5)$ $A = 20 \text{ u}^2$ $P = 2b + 2h$ $P = 2(4) + 2(5)$ $P = 8 + 10$ $P = 18 \text{ u}$	4, 4 square	$A = s^2$ $A = 4^2$ $A = 16 \text{ u}^2$ $P = 4s$ $P = 4(4)$ $P = 16 \text{ u}$	10, 3 rectangle
2, 4 rectangle		2, 3 rectangle		7, 9 rectangle
9, 10 square		8, 10 rectangle		5, 5 square
8, 5 rectangle		4, 9 rectangle		6, 7 square

Finding Area of Triangles

Directions: Find the area of the triangles below. All work must be shown. Please follow the example problem for work we expect to see.

10 in, 17 in $A = \frac{1}{2} bh$ $A = \frac{1}{2}(17)(10)$ $A = 85$ in²	19 mm, 15 mm	13 mm, 17 mm
9 km, 2 km	24 mm, 77 mm	11 m, 19 m
82 ft, 76 ft	13 km, 12 km	81 ft, 100 ft

Area

Directions: Find the total length of the cross-country ski trail below by finding the length of the individual segments. In each rectangular loop, the area and one side length are given. After you've 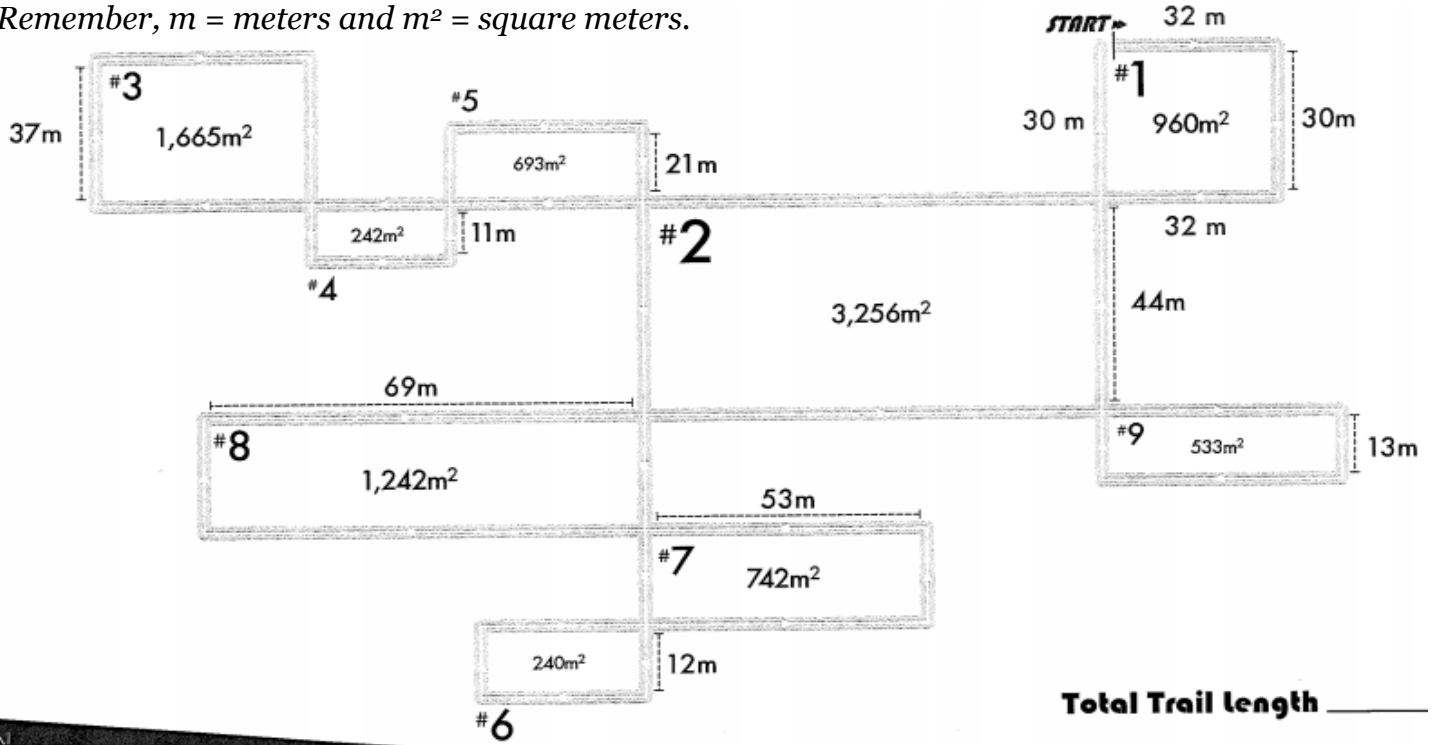solved for each segment length, add them together and write the total in the bottom right corner. Remember, m = meters and m² = square meters.

START ➤   32 m

#3
37m   1,665m²

#5
693m²   21m

#1
30 m   960m²   30m

242m²   11m

#4

#2
32 m
3,256m²   44m

69m

#8
1,242m²

#9
533m²   13m

53m

#7
742m²

240m²   12m

#6

Total Trail length _____

#1 Length = 30 m
Width = 32 m
Area = 960 m²

$$\begin{array}{r} 32 \\ 30\overline{)960} \\ -90 \\ \hline 60 \\ -60 \\ \hline 0 \end{array}$$

Perimeter = 124 m
30+32+30+32 = 124

#2 Length = 44 m
Width = _____
Area = 3,256 m²

Perimeter = _____

#3 Length = 37 m
Width = _____
Area = 1,665 m²

Perimeter = _____

#4 Length = 11 m
Width = _____
Area = 242 m²

Perimeter = _____

#5 Length = 21 m
Width = _____
Area = 693 m²

Perimeter = _____

#6 Length = 12 m
Width = _____
Area = 240 m²

Perimeter = _____

#7 Length = _____
Width = 53 m
Area = 742 m²

Perimeter = _____

#8 Length = _____
Width = 69 m
Area = 1,242 m²

Perimeter = _____

#9 Length = 13 m
Width = _____
Area = 533 m²

Perimeter = _____

Fill out the spaces with the perimeters of the 9 rectangular loops and add them together. ➤

124 m
_____
_____
_____
_____
_____
_____
_____
_____
+ _____

TOTAL ➤ _____

Coordinate System

Directions: Write the point that is located at each ordered pair.

1) $(6, 2)$ _____ 2) $(6, 8)$ _____

3) $(10, 1)$ _____ 4) $(4, 5)$ _____

5) $(9, 7)$ _____ 6) $(2, 3)$ _____

7) $(1, 6)$ _____ 8) $(5, 7)$ _____

9) $(2, 1)$ _____ 10) $(7, 4)$ _____
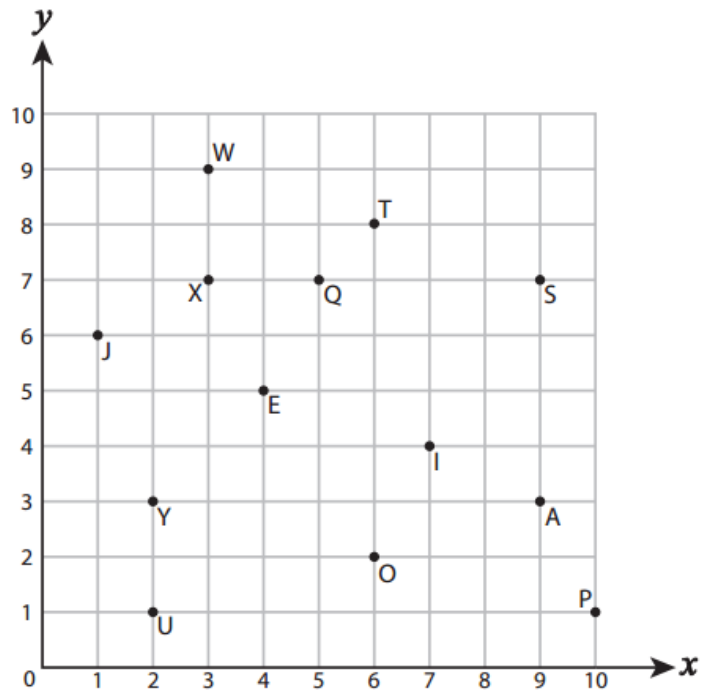
Directions: Write the ordered pair for each point.
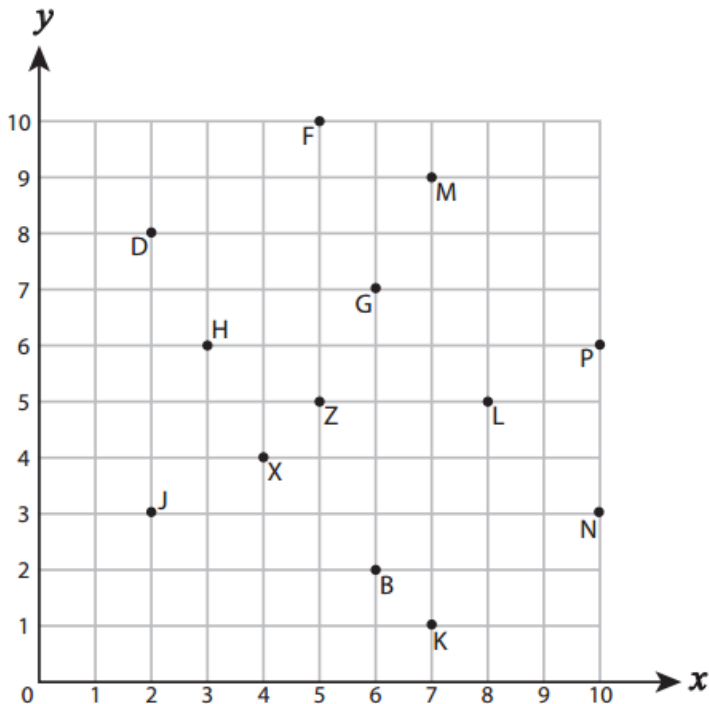
11) N (—— , ——) 12) X (—— , ——)

13) B (—— , ——) 14) L (—— , ——)

15) Z (—— , ——) 16) P (—— , ——)

17) D (—— , ——) 18) M (—— , ——)

19) J (—— , ——) 20) H (—— , ——)

Order of Operation

Directions: Simplify the following. Remember your PEMDAS rules!

PEMDAS Rules
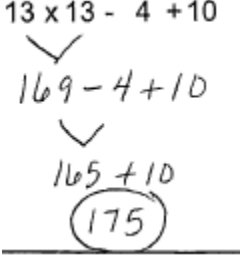
Evaluate the problem in the following order:

1) P - Parentheses

2) E - Exponents (Powers and Square Roots)

3) MD - Multiplication and Division (Left to Right)

4) AS - Addition and Subtraction (Left to Right)

13 x 13 - 4 +10 169 - 4 + 10 165 + 10 (175)	1. 18 − 11 + 19 x 3
2. 24 ÷ 8 x 11 + 3	3. 2 + 11 x 17 - 12
4. 9 + 4 x 12 + 15	5. 16 x 3 − 2 + 3
6. 16 + 9 − 10 ÷ 5	7. 16 ÷ 2 +19 - 16

Order of Operation

Directions: Simplify the following. Remember your PEMDAS rules!

$8 \div 4 \times 19 + 10 - 1$ $2 \times 19 + 10 - 1$ $38 + 10 - 1$ $48 - 1$ (47)	8. $2 \times 17 \div 13 \times 3 - 1$
9. $4 - 1 + 16 \times 11 \div 8$	10. $4 - 1 + 17 \times 18 \div 9$
11. $18 + 14 \div 2 \times 18 \times 16$	12. $17 \times 14 + 14 - 6 \times 10$
13. $17 \times 10 \div 2 - 1 \times 12$	14. $15 - 13 + 14 \times 9 + 19$
15. $9 \times 5 - 1 + 8 + 15$	16. $18 \times 11 \times 12 \div 3 - 2$

Squares & Cubes

Directions: Evaluate the following. You may use a calculator.

$(10)^3 = (10)(10)(10) = \boxed{1,000}$	$(12)^2 = (12)(12) = \boxed{144}$

1. $(2)^2 =$	2. $(9)^3 =$	3. $(4)^3 =$
4. $(4)^2 =$	5. $(7)^2 =$	6. $(12)^3 =$
7. $(5)^3 =$	8. $(6)^2 =$	9. $(8)^2 =$
10. $(3)^3 =$	11. $(1)^3 =$	12. $(8)^3 =$
13. $(5)^2 =$	14. $(2)^3 =$	15. $(11)^2 =$
16. $(7)^3 =$	17. $(6)^3 =$	18. $(9)^2 =$

Prime Factorization

Directions: Deteremine the prime factorization of the following numbers.

Example	1.	2.
Example 60 Prime → 2 30 6 5 2 3 Prime # Prime Prime # # Prime Factors 2 x 2 x 3 x 5 = 60	80 Prime Factors _ X _ X _ X _ X _ = 80	108 Prime Factors _ X _ X _ X _ X _ = 108
3. 88 Prime Factors _ X _ X _ X _ = 88	4. 54 Prime Factors _ X _ X _ X _ = 54	5. 100 Prime Factors _ X _ X _ X _ = 100
6. 24 Prime Factors _ X _ X _ X _ = 24	7. 44 Prime Factors _ X _ X _ = 44	8. 50 Prime Factors _ X _ X _ = 50

Ratios

Directions: Solve each problem. SHOW ALL WORK!

1. A recipe called for the ratio of sugar to flour to be 5 : 1. If you used 35 ounces of sugar, how many ounces of flour would you need to use?	2. A buffet offers ranch or Caesar dressing. The ratio of ranch dressing used to Caesar dressing used is 8 : 3. If the buffet uses 72 cases of ranch dressing, how many cases of Caesar do they use?
3. The ratio of two numbers is 7:2. The difference between the two numbers is 15. What is the greater number?	4. The areas of three lawns are in the ratio of 2:4:7. The medium-sized lawn has an area of 72 square yards. It costs $2 per square yard to fertilize the lawns. How much more does it cost to fertilize the largest lawn than the smallest lawn?
5. The ratio of Theo's age to Zack's age is 7:10. Twelve years ago, Zack was twice as old as Theo. What will be the ratio of Theo's age to Zack's age 9 years from now?	6. Mrs. Smith rears chickens and sheep on her farm. The ratio of the total number of legs of the chickens to the total number of legs of the sheep is 4:7. Find the least number of chickens and the least number of sheep on Mrs. Smith's farm.

Percents

Directions: Solve each problem. SHOW ALL WORK!!

1. The price of concert tickets was $5. The singer got $\frac{2}{5}$ of the price. What percent does the singer get?	2. What is 150% of 18?
3. What is 35% of 0.3 kilogram?	4. In a room of 80 children, $\frac{3}{4}$ of them wear glasses. 25% of those who wear glasses are boys. How many girls in the room wear glasses?
5. A salesman sold 40% of the jackets he had. He had 150 jackets left. The salesman received $8,000 from the sales. How much did 5 jackets cost?	6. Explain the errors made by Jenny. a. 0.7 is 7% or 7 out of 100 b. $\frac{7}{10} = \frac{7}{100} = 7\%$ c. $\frac{2}{5} \times 100 = 40\%$

Conversions

Directions: Convert each measurement.

Units of capacity	
8 fluid ounces	1 cup
2 cups	1 pint
2 pints	1 quart
4 quarts	1 gallon

This conversion table shows how to convert ounces, cups pints, quarts, and gallons.

Katya's thermos holds 8 pints. How many cups does it hold?

8 x 2 = 16   16 cups

Hannah's thermos holds 6 cups. How many pints does it hold?

6 ÷ 2 = 3   3 pints

1. 32 fluid ounces _____ cups	2. 6 cups _____ pints	3. 4 quarts _____ pints	4. 16 quarts _____ gallons
5. 16 gallons _____ pints	6. 5 quarts _____ cups	7. 36 cups _____ quarts	8. 72 pints _____ gallons
9. 1 quart _____ fluid ounces	10. 240 fluid ounces _____ pints	11. 7 quarts _____ cups	12. 11 gallons _____ pints

Units of length	
12 inches	1 foot
3 feet	1 yard
5,280 feet	1 mile
1,760 yards	1 mile

This conversion table shows how to convert inches, feet, yards, and miles.

Brian's rope is 60 inches long. How many feet long is it?

60 ÷ 12 = 5   5 feet long

Neilika's rope is 3 yards long. How many inches long is it?

3 x 3 = 9   9 feet long
9 x 12 = 108   108 inches long

13. 36 inches _____ feet	14. 6 feet _____ yards	15. 12 feet _____ inches	16. 6 yards _____ feet
17. 4 yards _____ inches	18. 5 yards _____ inches	19. 15,840 feet _____ miles	20. 3,520 yards _____ miles

Convert 25 centimeters to millimeters.   Convert 200¢ to dollars.

25 x 10 =   250 mm   200 ÷ 100 = $2

1. 40 cm _____ mm	2. 15 cm _____ mm	3. 30 mm _____ cm	4. 100 mm _____ cm
5. $35 _____ ¢	6. $600 _____ ¢	7. 450¢ $ _____	8. 150¢ $ _____