Summer Math Packet

Pre-Algebra

Rounding Decimals

Find your place and look next door.
5 or greater, add one more.

All digits in front, stay the same.
All digits behind, zero's the name.

Round 1.362 to the nearest hundredths.

1.362 → 1.360

6 is at the hundredths place.
We look next door and find the number 2.
2 is less than 5 and so 6 remains the same.

Round 25.378 to the nearest tenths.

25.378 → 25.400

3 is at the tenths place.
We look next door and find the number 7.
7 is more than 5 and so we increase 3 to 4.

435 x 551

Round the following to the given place value.

_____ **1.** **125.38745** to the nearest tenth.

_____ **2.** **125.38745** to the nearest tens.

_____ **3.** **125.38745** to the nearest ones.

_____ **4.** **125.38745** to the nearest thousandths.

_____ **5.** **125.38745** to the nearest hundredths.

Adding and Subtracting Decimals

Example: Add 3.25, 0.075 and 5

Line the decimals up:	3.25 0.075 + 5.
"Pad" with zeros:	3.250 0.075 + 5.000
Add:	3.250 0.075 + 5.000 8.325

Example: What is 7.368 – 1.15 ?

Line the decimals up:	7.368 – 1.15
"Pad" with zeros:	7.368 – 1.150
Subtract:	7.368 – 1.150 6.218

Add or subtract the following decimals. Show your scratch work on this paper.

_____ **6.** $2.45+1.7+4.03=$

_____ **7.** $28.512-16.87=$

_____ **8.** $5.2+10+7.9=$

_____ **9.** $73.9-39.53=$

To multiply decimal numbers:

1. Multiply the numbers just as if they were whole numbers.

- Line up the numbers on the right - **do not align the decimal points**.
- Starting on the right, multiply each digit in the top number by each digit in the bottom number, just as with whole numbers.
- Add the products.

2. Place the decimal point in the answer by starting at the right and moving a number of places equal to the sum of the decimal places in both numbers multiplied.

$3.77 \times 2.8 = ?$

$$\begin{array}{rl} & 3.77 \ (2 \text{ decimal places}) \\ \times & \underline{\ 2.8\ } \ (1 \text{ decimal place}) \\ & 3016 \\ & +754 \\ & \overline{10.556} \ (3 \text{ decimal places}) \end{array}$$

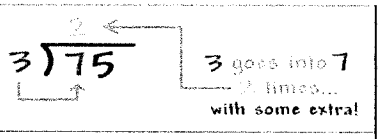
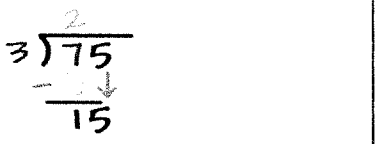
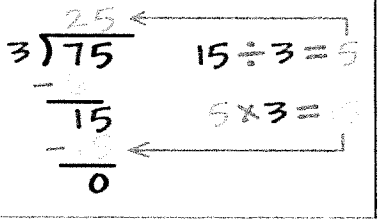
Multiply the following decimals. Show your scratch work on this paper.

_____ **10.** $4.45 \times 5.7 =$

_____ **11.** $14.512 \times 26 =$

_____ **12.** $5.2 \times 13.2 =$

_____ **13.** $73.91 \times 2.7 =$

Divide:	
Multiply:	
Subtract:	
Bring Down:	
Repeat:	

Divide the following decimals. Show your scratch work on this paper.

_____ **14.** $1.476 \div 2 =$

_____ **15.** $14.532 \div 6 =$

_____ **16.** $175.2 \times \div 12 =$

_____ **17.** $457.5 \div 25 =$

Simplifying Fractions

- To write a fraction in **simplest form** or **lowest terms** follow these two steps:

1 – Find the Greatest Common Factor (GCF) of the numerator and denominator.

2 – Divide both the numerator and the denominator by the GCF.

Example: $\frac{12}{18}$ 12 – 1,2,3,4,**6**,12 18 – 1,2,3,**6**,9,18 $\frac{12}{18} \div \frac{6}{6} = \frac{2}{3}$

Reduce the following fractions to simplest form. Show your work on this paper.

_____ **18.** $\frac{3}{15}$

_____ **19.** $\frac{14}{49}$

_____ **20.** $\frac{50}{125}$

_____ **21.** $\frac{16}{48}$

_____ **22.** $\frac{8}{80}$

Steps to solve fractions with like denominators: FRACTIONS

1) Add or subtract the numerators of the fractions
2) Keep the denominator the same!
3) Simplify (simplest form) the answer (includes changing improper fractions into mixed numbers).

Ex: $\frac{2}{5} + \frac{1}{5} = \frac{2+1}{5} = \frac{3}{5}$

Ex: $\frac{3}{5} - \frac{1}{5} = \frac{3-1}{5} = \frac{2}{5}$

Ex: $2\frac{3}{5} + 1\frac{1}{5} = 3\frac{4}{5}$

Add or Subtract the fractions that already have common denominators. Remember that you might have to reduce your answer. Show your work on this paper.

_____ **23.** $\frac{2}{7}+\frac{3}{7}=$

_____ **24.** $\frac{14}{49}-\frac{10}{49}=$

_____ **25.** $\frac{7}{8}-\frac{3}{8}=$

_____ **26.** $\frac{1}{10}+\frac{7}{10}=$

_____ **27.** $\frac{1}{8}+\frac{3}{8}+\frac{4}{8}=$

Adding and Subtracting Fractions with Unlike Denominators

$$\frac{7}{10}-\frac{7}{15}$$

Analysis: The denominators are not the same. The LCD of 10 and 15 is 30.

Solution: Make equivalent fractions with the new denominator:

$$\frac{7}{10}-\frac{7}{15}=\frac{\quad}{30}+\frac{\quad}{30}$$

$$\frac{7}{10}=\frac{7x3}{10x3}=\frac{21}{30} \text{ and } \frac{7}{15}=\frac{7x2}{10x2}=\frac{14}{30}$$

Subtract the numerators:

$$\frac{21}{30}-\frac{14}{30}=\frac{7}{30}$$

Adding and Subtracting Fractions with Like Denominators

If the denominators of the fractions are different, then first find equivalent fractions with a common denominator before adding. For example, let's add 4 1/3 to 3 2/5. Using the techniques we've learned, you can find the least common denominator of 15. The answer is 7 11/15.

$$\begin{array}{rl} 4\frac{1}{3} & = 4\frac{5}{15} \\ +\,3\frac{2}{5} & = 3\frac{6}{15} \\ \hline & 7\frac{11}{15} \end{array}$$

Subtracting Fractions when you have to Barrow

$$4\frac{2}{3} \rightarrow 4\frac{8}{12} \rightarrow 3+1\frac{8}{12} \rightarrow 3\frac{20}{12}$$

$$-2\frac{3}{4} \qquad -2\frac{9}{12} \qquad -2\frac{9}{12} \qquad -2\frac{9}{12}$$

$$1\frac{11}{12}$$

Add or Subtract the fractions without common denominators. Remember that you might have to reduce your answer. Show your work on this paper.

_____ **28.** $\frac{9}{10}+\frac{3}{12}=$

_____ **29.** $3\frac{12}{13}+2\frac{25}{26}=$

_____ **30.** $2\frac{7}{9}+1\frac{3}{8}=$

_____ **31.** $8\frac{12}{15}-3\frac{5}{10}=$

_____ **32.** $10\frac{3}{4}-5\frac{8}{9}=$

Multiplying Fractions

Problem #1 $3\frac{1}{8} \times 2\frac{2}{3}$

Step 1 : Change each number to an improper fraction.

$$3\frac{1}{8} = \frac{3 \times 8 + 1}{8} = \frac{25}{8}$$

$$2\frac{2}{3} = \frac{2 \times 3 + 2}{3} = \frac{8}{3}$$

Step 2: Multiply the numerators. Then multiply the denominators.

$$\frac{25}{8} \times \frac{8}{3} = \frac{25 \times 8}{8 \times 3}$$

In this example, we have common factors on the top and bottom that can be canceled out.

$$\frac{25}{8} \times \frac{8}{3} = \frac{25 \times 8}{8 \times 3} = \frac{25}{3}$$

So $3\frac{1}{8} \times 2\frac{2}{3} = \frac{25}{3}$ *or* $8\frac{1}{3}$

Multiplying Mixed Numbers. Remember to change your answer back into a mixed number. Show your work on this paper.

_____ **32.** $\frac{9}{10} \times \frac{5}{12} =$

_____ **33.** $2\frac{2}{4} \times 6\frac{3}{4} =$

_____ **34.** $5\frac{10}{12} \times \frac{9}{10} =$

Dividing Fractions

$$12\frac{2}{3} \div 3\frac{4}{5}$$

Solution: First we will convert each mixed number to an improper fraction. Then we can divide those fractions.

$$12\frac{2}{3} \div 3\frac{4}{5}$$

Step 1:

$$12\frac{2}{3} = \frac{38}{3} \text{ and } 3\frac{4}{5} = \frac{19}{5}$$

Step 2:

$$\frac{38}{3} \div \frac{19}{5} = \frac{38}{3} \times \frac{5}{19} = \frac{38 \times 5}{3 \times 19} = \frac{2 \times 5}{3 \times 1} = \frac{10}{3} = 3\frac{1}{3}$$

Dividing Mixed Numbers. Show your work on this paper.

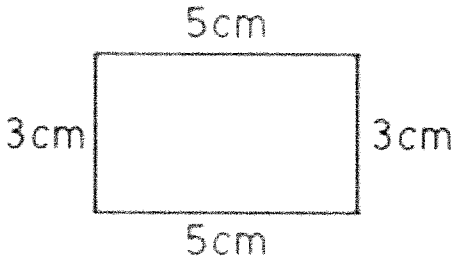
_____ **35.** $\frac{4}{15} \div \frac{24}{90} =$

_____ **36.** $3\frac{12}{13} \div 2\frac{25}{26} =$

_____ **37.** $5\frac{10}{12} \div 1\frac{1}{9} =$

Finding the Perimeter and Area of a Rectangle

Find the Perimeter



length = 5cm
width = 3cm

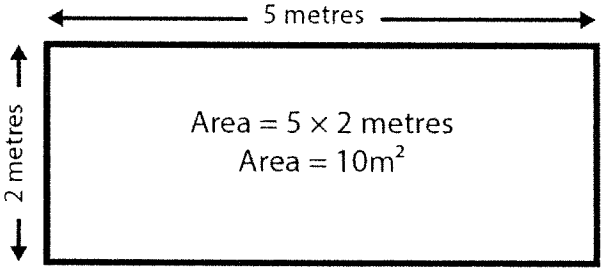
P = 5cm + 3cm + 5cm + 3cm = 16cm

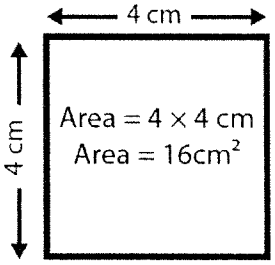
The simplest (and most commonly used) area calculations are for squares and rectangles.

To find the area of a rectangle, multiply its height by its width.

For a square you only need to find the length of one of the sides (as each side is the same length) and then multiply this by itself to find the area. This is the same as saying length^2 or length squared.

It is good practice to check that a shape is actually a square by measuring two sides. For example, the wall of a room may look like a square but when you measure it you find it is actually a rectangle.





_____ **38. Perimeter of A**

_____ **39. Area of A**

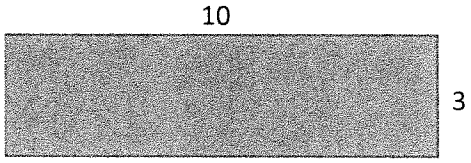
_____ **40. Perimeter of B**

_____ **41. Area of B**

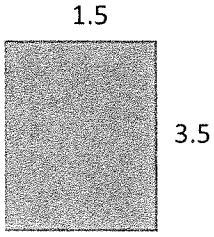
_____ **42. Perimeter of C**

_____ **43. Area of C**

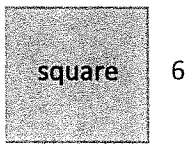
A.



B.



C.



Here are the rules in the Order of Operations:

- Do everything inside of brackets first.
- Next, any exponents or roots (if you don't know what these are, don't worry about them for now).
- Multiplication and division, performing them left to right
- Addition and subtraction, performing them left to right

Let's do a few examples:

40 + 1 - 5 x 7 + 6 ÷ (3 x 2)

First we do the brackets:

40 + 1 - 5 x 7 + 6 ÷ 6

Now we do the multiplication and division, left to right:

40 + 1 - 35 + 1

Now addition and subtraction, left to right:

The answer = 7

Solve using the Order of Operations. Show your work on this page.

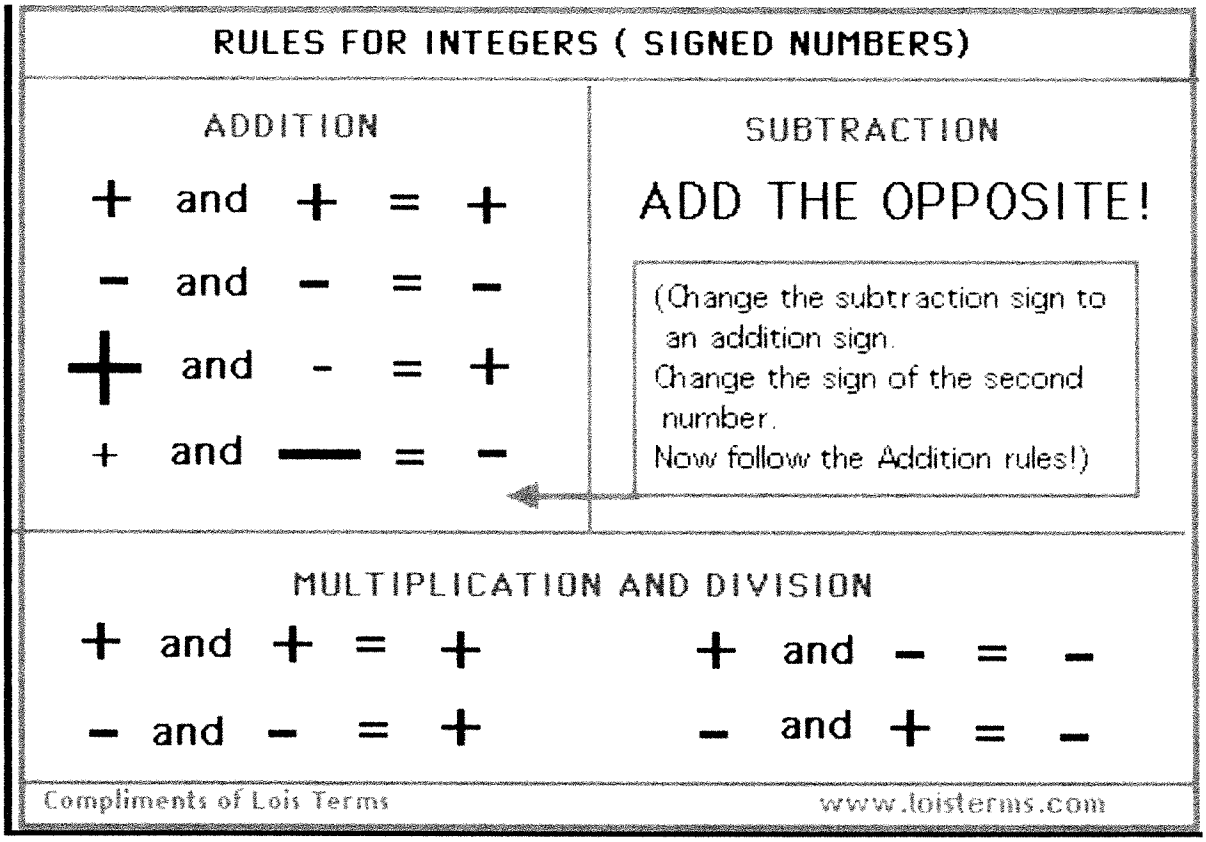
_____ **44.** $3^4 - 6 \times 5$

_____ **45.** $(17+3)^2 \div 2 - 1$

_____ **46.** $(12+23) \times 2^3$

_____ **47.** $3 \times (18 \div 6) + 2$

_____ **48.** $51 + 5 \times 3^2 - 2$



_____ **49.** -6×5

_____ **50.** $-2-10$

_____ **51.** $-15\times(-4)$

_____ **52.** $-3+12$

_____ **53.** $-15\div(-3)$

_____ **54.** $-27+15$

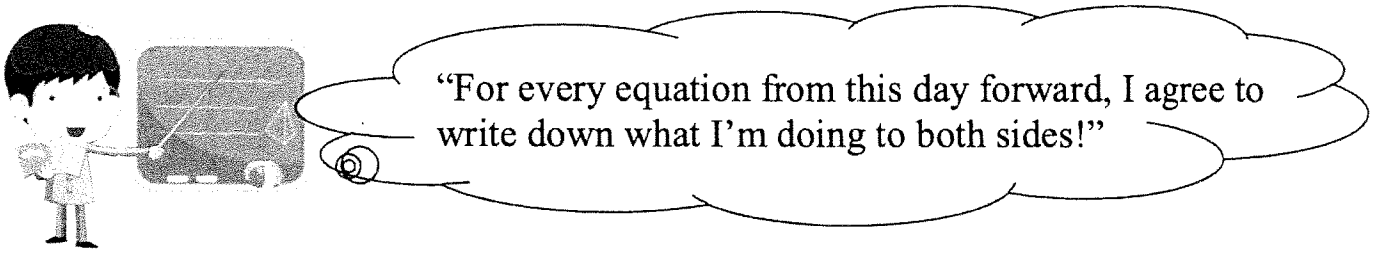
_____ **55.** $-10+5-6$

_____ **56.** $12+(-3)+6+(-7)+2$

***EQUATIONS ARE LIKE BALANCED SEE-SAWS…AND MUST REMAIN BALANCED!!

To solve a one-step equation:

1. **Locate the variable in the equation**
2. **Use the inverse (opposite) operation on both sides of the equation**
3. **Show your answer**



_____ **57.** $-6x = 36$

_____ **58.** $x - 2 = 10$

_____ **59.** $-15x = -45$

_____ **60.** $-3 + x = 31$

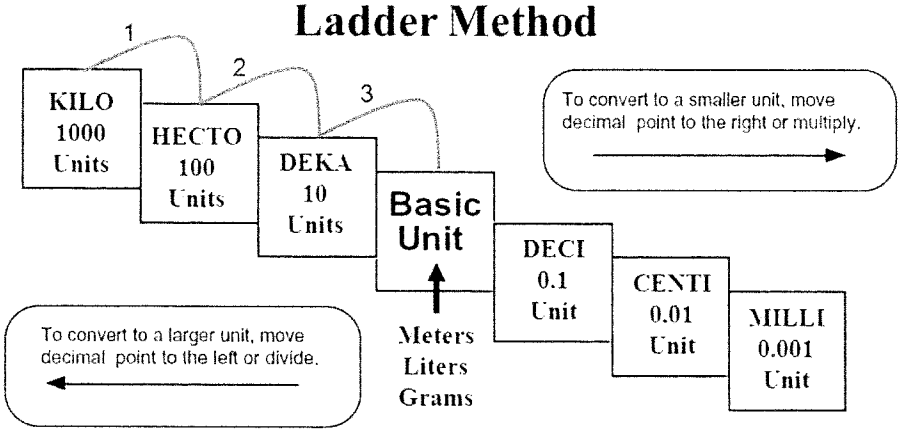
_____ **61.** $\frac{x}{-5} = 2$

_____ **62.** $-27x = 54$

_____ **63.** $\frac{x}{4} = 10$

_____ **64.** $-12x = -48$

Ladder Method



How do you use the "ladder" method?

1st – Determine your starting point.

2nd – Count the "jumps" to your ending point.

3rd – Move the decimal the same number of jumps in the same direction.

4 km = _____ m

Starting Point Ending Point

How many jumps does it take?

4._._._. = 4000 m

1 2 3

_____ **65.** $6.2ml = _____ L$

_____ **66.** $4.12mm = _____ km$

_____ **67.** $150hg = _____ cg$

_____ **68.** $.0024dl = _____ dkl$

_____ **69.** $4{,}400cm = _____ km$

The following group of problems are multiple choice. They are mixed up types of problems that are basic math information.

_____**70.** A mother dog has a litter of 12 puppies. If $\frac{2}{3}$ of the puppies are brown, then how many puppies are **not** brown?

Ⓐ 3
Ⓑ 4
Ⓒ 6
Ⓓ 8

_____**71.** Sam wants to buy a toy for $40. He has a coupon for 20% off. How much will Sam have to pay for the toy if there is no tax?

Ⓐ $8
Ⓑ $26
Ⓒ $32
Ⓓ $36

_____**72.** Which function represents the data in the following table?

x	3	4	5	6
y	8	10	12	14

Ⓐ $y = x \div 5$
Ⓑ $y = x + 8$
Ⓒ $y = 2x + 2$
Ⓓ $y = \frac{x-2}{2}$

_____**73.** What is the mean of the data set below?

4, 7, 9, 11, 3

Ⓐ 6.8
Ⓑ 9
Ⓒ 8.5
Ⓓ no answer

_____**74.** What is the median of the data set below?

12, 21, 5, 21, 18

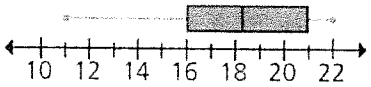
Ⓐ 15.4
Ⓑ 21
Ⓒ 18
Ⓓ no answer

_____**75.** What is the mode of the data set below?

24, 41, 27, 26, 52, 11

Ⓐ 30.2
Ⓑ 36.2
Ⓒ 46.2
Ⓓ no answer

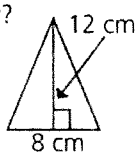
_____**76.** What is the upper quartile of the graph below?



Ⓐ 16
Ⓑ 18
Ⓒ 21
Ⓓ 22

_____**77.** 273 is 52% of what number?
Ⓐ 525
Ⓑ 252
Ⓒ 141.96
Ⓓ 568.75

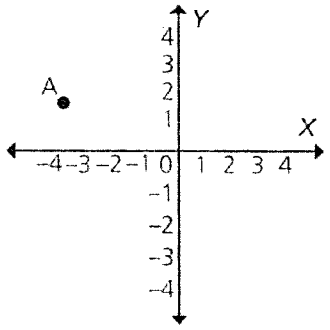
_____**78.** What is the area of the triangle below?



Ⓐ 96 cm^2
Ⓑ 32 cm^2
Ⓒ 84 cm^2
Ⓓ 48 cm^2

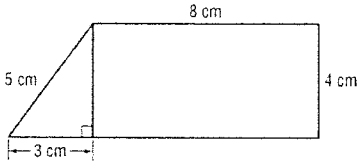
_____**79.** Evaluate $7t - 15$ when $t = 18$.
Ⓐ 111
Ⓑ 21
Ⓒ −144
Ⓓ 2.1

_____**80.** What ordered pair would be used to represent Point A on the graph below?



Ⓐ (2,−4)
Ⓑ (−4,2)
Ⓒ (−4,−2)
Ⓓ (−2,4)

81. Look at the figure below.



What is the area of the figure?

A 12 cm^2
B 32 cm^2
C 38 cm^2
D 42 cm^2

82. The table below shows the charges for a taxi ride in a city.

Charges for Each Taxi Ride	
Charges	**Rate**
Mileage Charge	$0.75 Each Mile
City Gas Tax	$0.10 Each Mile
Tourist Charge	$2.50

If a taxi ride is m miles, which expression can be used to find the total charge of the ride?

F $2.50m + 0.75$
G $0.75m + 2.50$
H $0.10m + 3.25$
J $0.85m + 2.50$

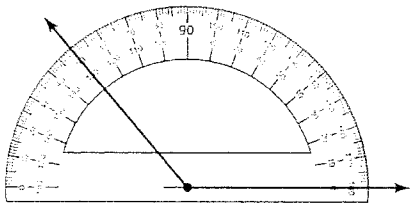
83. Look at the table below. Which of the following has NOT been rounded correctly to the nearest hundred?

Population in 2005		
City	**Exact Population**	**Estimated Population**
Austin	690,252	690,300
Chicago	3,844,829	3,844,800
Seattle	557,087	557,100
St. Louis	912,332	912,330

Source: U.S. Census Bureau

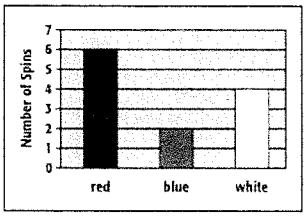
A Chicago
B Austin
C Seattle
D St. Louis

84. Which of the following is closest to the measure of the angle shown below?



F 50°
G 80°
H 130°
J 180°

_____**85.** Adam spins a spinner 12 times. The results are shown in the bar graph below. Which fraction of the spins were red or blue?



A $\frac{2}{3}$ **C** $\frac{7}{12}$

B $\frac{3}{4}$ **D** $\frac{5}{6}$

_____**86.** The table below shows the length of the hiking trails at a local park. Aaron hikes half of the blue trail. What distance did he hike?

Hiking Trails	
Trail	**Length (miles)**
Red	1.09
Blue	1.86
Green	1.10
Yellow	1.28

A 0.5 mile **B** 0.93 mile **C** 1.86 miles **D** 3.72 miles

_____**87.** The table shows the cost of ride tickets at the fair. What is the unit rate for one ride ticket?

Number of Tickets	Cost
5	$3.75
10	$7.50
15	$11.25
20	$15.00

F $0.37 **G** $0.55 **H** $0.70 **J** $0.75