

# Summer Homework Packet

## Incoming 7<sup>th</sup> Grade

Dear Parents/Guardians and Students,

Throughout the summer it is very important to review topics from previous mathematics grade levels. The problems in this packet are designed to help you review and work on skills to be a successful 7<sup>th</sup> grade math student. This packet will count as a homework grade and these topics will appear on a quiz at the beginning of the marking period (after a review is completed).

The summer homework packet is due **Wednesday, September 7<sup>th</sup> 2016**. In order to receive full credit for the summer homework assignment, all work must be shown on a separate sheet of paper (homework does not have to be 100% correct to receive full credit; it needs to be completed to the best of your ability and on time). There are two additional worksheets attached to the packet that are extra credit. These two pages do not have to be completed; however any student that completes them and shows their work will receive extra credit.

Have a wonderful summer!

Miss Brooks

7<sup>th</sup> grade math teacher

## Review 4

## Estimating with Decimals

No calculator - Show work on separate paper.

To round \$76.38 to the nearest dollar:

- ① Find the rounding place. \$76.38
- ② Look at the digit to the right. \$76.38
- ③ If that digit is less than 5, leave the digit in the rounding place as is. If the digit is 5 or greater, round up.

\$76.38 rounds to \$76.

You can use rounding to estimate a sum.

$$3.76 + 0.85 + 4.09$$

Round each number to the ones place.

$$3.76 \rightarrow 4$$

$$0.85 \rightarrow 1$$

$$4.09 \rightarrow 4$$

Then add.      9

The sum is about 9.

You can estimate decimal products, quotients, sums, and differences by using *compatible numbers*.

*Example 1* Estimate the product  $9.47 \times 3.81$

$$\begin{array}{r} 9.47 \rightarrow 10 \\ \times 3.81 \rightarrow \times 4 \\ \hline 40 \end{array} \quad \text{Change to compatible numbers—numbers that are easy to multiply.}$$

The product is about 40.

*Example 2* Estimate the quotient  $23.96 \div 4.78$ .

$$\begin{array}{r} 23.96 \div 4.78 \\ \downarrow \quad \downarrow \\ 24 \div 4 = 6 \end{array} \quad \text{Change to compatible numbers—numbers that are easy to divide.}$$

The quotient is about 6.

Round each decimal to the nearest hundredth.

1. 1.679 \_\_\_\_\_
2. 4.981 \_\_\_\_\_
3. 12.602 \_\_\_\_\_
4. 32.9744 \_\_\_\_\_
5. 0.159 \_\_\_\_\_
6. 2.008 \_\_\_\_\_

Round each decimal to the nearest tenth.

7. 6.457 \_\_\_\_\_
8. 15.0886 \_\_\_\_\_
9. 0.1235 \_\_\_\_\_
10. 1.036 \_\_\_\_\_
11. 25.671 \_\_\_\_\_
12. 6.390 \_\_\_\_\_

Estimate each sum or difference.

13.  $\begin{array}{r} \$2.98 \\ + 7.22 \\ \hline \end{array}$
14.  $\begin{array}{r} \$5.33 \\ + 2.91 \\ \hline \end{array}$
15.  $\begin{array}{r} \$10.02 \\ - 6.89 \\ \hline \end{array}$
16.  $\begin{array}{r} \$15.84 \\ + 37.12 \\ \hline \end{array}$

Use compatible numbers to estimate.

17.  $7.21 \div 3$   
\_\_\_\_\_
18.  $31.74 \div 5$   
\_\_\_\_\_
19.  $522 + 81$   
\_\_\_\_\_
20.  $908 - 445$   
\_\_\_\_\_
21.  $477 + 78$   
\_\_\_\_\_
22.  $73 + 229$   
\_\_\_\_\_

# Review 10

## Order of Operations

To find the value of an expression follow the *order of operations*.

- First**, do all operations inside parentheses.
- Next**, multiply and divide from left to right.
- Then**, add and subtract from left to right.

NO calculator  
Show work on  
seperate paper

*Example 1* Find the value of  $6 + (3 + 4) \times 2$ .

- ① Work inside parentheses.  $\rightarrow (3 + 4) = 7$   
 $6 + 7 \times 2$
- ② Multiply next.  $\rightarrow 7 \times 2 = 14$   
 $6 + 14$
- ③ Then, add.  
 $6 + 14 = 20$

*Example 2* Compare  $10 - (6 \div 2) + 1$  and  $(10 - 6) \div 2 + 1$ .

First, find the value of each expression.

$10 - (6 \div 2) + 1$	$(10 - 6) \div 2 + 1$
$10 - 3 + 1$	$4 \div 2 + 1$
$7 + 1$	$2 + 1$
8	3

Then, use  $<$ ,  $=$ , or  $>$  to compare.

$8 > 3$

So,

$10 - (6 \div 2) + 1 > (10 - 6) \div 2 + 1$ .

**Find the value of each expression.**

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. <math>3 + (4 + 1) \times 2</math></li> <li>a. <math>4 + 1 =</math> _____</li> <li>b. _____ <math>\times 2 =</math> _____</li> <li>c. <math>3 +</math> _____ <math>=</math> _____</li> <li>3. <math>2 + 6 \times 3 \div 3 =</math> _____</li> <li>5. <math>7 + 5 \times 2 - 6 =</math> _____</li> </ol> | <ol style="list-style-type: none"> <li>2. <math>24 \div (5 + 3) - 2</math></li> <li>a. <math>5 + 3 =</math> _____</li> <li>b. <math>24 \div</math> _____ <math>=</math> _____</li> <li>c. _____ <math>- 2 =</math> _____</li> <li>4. <math>(6 + 2) \times 3 \div 4 =</math> _____</li> <li>6. <math>12 \div 3 \times 5 - 6 =</math> _____</li> </ol> |
|--|--|

**Use  $<$ ,  $=$ , or  $>$  to complete each statement.**

- |   |  |
|---|--|
| 7. $9 + 3 \times 4$ <input type="checkbox"/> $9 + (3 \times 4)$               | 8. $(12 - 4) \times 3$ <input type="checkbox"/> $12 - (4 \times 3)$          |
| 9. $6 \div 3 + 4 \times 2$ <input type="checkbox"/> $(6 \div 3) + 4 \times 2$ | 10. $3 \times (12 - 5) + 2$ <input type="checkbox"/> $3 \times 12 - (5 + 2)$ |
| 11. $15 - (12 \div 3)$ <input type="checkbox"/> $(15 - 12) + 3$               | 12. $8 + 2 \times (9 - 7)$ <input type="checkbox"/> $8 + (2 \times 9) - 7$   |
| 13. $10 + (10 \div 5)$ <input type="checkbox"/> $10 + 10 \div 5$              | 14. $20 - (2 \times 6)$ <input type="checkbox"/> $(20 - 2) \times 6$         |

## Review 24

## Mixed Numbers and Improper Fractions

To write a mixed number as an *improper fraction*:

- ① Multiply the whole number by the denominator.
- ② Add this product to the numerator.
- ③ Write this sum over the denominator.

$$\begin{array}{c} \textcircled{2} \quad \textcircled{3} \\ \downarrow \quad \downarrow \\ 3 \times 8 = 24 \\ \downarrow \\ 24 + 5 = 29 \\ \textcircled{1} \quad \downarrow \\ 29 \\ \hline 8 \end{array}$$

To write an improper fraction as a *mixed number*:

- ① Divide the numerator by the denominator.  $\frac{20}{8} = 2$  remainder 4
- ② Write the remainder over the denominator.  $= 2\frac{4}{8}$
- ③ Simplify, if possible.  $= 2\frac{1}{2}$

$$\frac{20}{8} = 2\frac{1}{2}$$

No calculator show work on separate paper

Write each mixed number as an improper fraction.

- |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1. $2\frac{2}{7}$ _____  | 2. $5\frac{3}{4}$ _____  | 3. $6\frac{1}{2}$ _____  |
| 4. $6\frac{5}{8}$ _____  | 5. $3\frac{4}{10}$ _____ | 6. $4\frac{3}{5}$ _____  |
| 7. $9\frac{1}{3}$ _____  | 8. $4\frac{4}{5}$ _____  | 9. $1\frac{7}{8}$ _____  |
| 10. $3\frac{3}{8}$ _____ | 11. $2\frac{3}{7}$ _____ | 12. $8\frac{1}{6}$ _____ |

On a separate sheet of paper, draw a model of a 4-inch ruler marked off in eighths. Find and label each measurement on your ruler.

- |                    |                    |                    |
|--------------------|--------------------|--------------------|
| 13. $3\frac{5}{8}$ | 14. $2\frac{6}{8}$ | 15. $3\frac{1}{2}$ |
| 16. $1\frac{3}{4}$ | 17. $2\frac{1}{2}$ | 18. $3\frac{1}{4}$ |

Write each improper fraction as a mixed number in simplest form.

- |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 19. $\frac{9}{8}$ _____  | 20. $\frac{7}{2}$ _____  | 21. $\frac{12}{5}$ _____ |
| 22. $\frac{8}{3}$ _____  | 23. $\frac{14}{8}$ _____ | 24. $\frac{6}{5}$ _____  |
| 25. $\frac{20}{3}$ _____ | 26. $\frac{17}{5}$ _____ | 27. $\frac{18}{4}$ _____ |
| 28. $\frac{9}{5}$ _____  | 29. $\frac{29}{8}$ _____ | 30. $\frac{24}{9}$ _____ |

# Review 50 *No Calculator*

Percents, Fractions, and Decimals

- To write a percent as a fraction in simplest form, first write a fraction with a denominator of 100. Then simplify.

$$74\% = \frac{74}{100} = \frac{37}{50}$$

- To write a percent as a decimal, first write a fraction with a denominator of 100. Then write the decimal.

$$74\% = \frac{74}{100} = 0.74$$

- To write a decimal as a percent, move the decimal point two places to the right.

$$0.23 = 23\%$$

Here are two ways to write a fraction as a percent.

- Write an equivalent fraction with a denominator of 100, then write the percent.

$$\frac{3}{20} = \frac{15}{100} = 15\%$$

- Divide the numerator by the denominator.

$$\frac{3}{8} = \frac{0.375}{1} = 37.5\%$$

$$\begin{array}{r} 8 \overline{)3.000} \\ \underline{-24} \phantom{00} \\ 60 \phantom{0} \\ \underline{-56} \phantom{0} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

↑

Move the decimal point two places to the right.

So,  $\frac{3}{8} = 37.5\%$ .

*No calculator - Show work  
On separate paper*

Write each percent as a decimal and as a fraction in simplest form.

1. 30%

2. 14%

3. 16%

4. 5%

5. 92%

6. 80%

7. 21%

8. 38%

Write each fraction or decimal as a percent.

9.  $\frac{17}{25}$

10. 0.85

11. 0.16

12.  $\frac{5}{40}$

13.  $\frac{7}{200}$

14.  $\frac{1}{10}$

15. 0.64

16. 0.008

17.  $\frac{9}{20}$

18.  $\frac{6}{15}$

19. 0.32

20. 0.07

21.  $\frac{13}{100}$

22.  $\frac{45}{50}$

23. 0.010

24. 0.60

## Review 54

..... Show work on separate paper .....  
 ..... can use calculator .....

## Mean, Median, and Mode

- The *mean* of a set of data is the sum of the values divided by the number of data items.

$$74 + 77 + 80 + 81 + 85 + 87 + 94 + 94 = 672$$

$$672 \div 8 = 84$$

The mean math test grade is 84.

- The *median* of a data set is the middle value when the data are arranged in numerical order. When the grades are arranged in order from least to greatest, there are two middle numbers.

$$74, 77, 80, 81, 85, 87, 94, 94$$

To find the median, add the two middle numbers and divide the total by 2.

$$81 + 85 = 166$$

$$166 \div 2 = 83$$

The median grade is 83.

- The *mode* of a data set is the item in the data set that appears most often. For this data, 94 is the mode.

Math Test Grades	
Sharon	81
Rashid	94
Durrin	77
Nicole	80
Terry	74
Mei-lin	94
Kevin	87
Carlos	85

## Find the mean of each data set.

1. 8, 6, 5, 9, 7, 13

\_\_\_\_\_

2. 12, 10, 16, 14, 8, 24

\_\_\_\_\_

3. 9, 12, 14, 6, 8, 5

\_\_\_\_\_

4. 104, 126, 128, 100, 97

\_\_\_\_\_

5. 86, 68, 70, 48, 66, 76

\_\_\_\_\_

6. 65, 50, 95, 35, 75, 100

\_\_\_\_\_

## Find the median of each data set.

7. 5, 4, 7, 9, 8

\_\_\_\_\_

8. 12, 16, 19, 14, 14, 18

\_\_\_\_\_

9. 9, 19, 21, 13

\_\_\_\_\_

10. 46, 38, 22, 48, 61

\_\_\_\_\_

11. 60, 57, 53, 78, 44, 51

\_\_\_\_\_

12. 8, 6, 6, 5, 8, 9

\_\_\_\_\_

## Find the mode of each data set.

13. 3, 4, 5, 5, 3, 5, 4, 2

\_\_\_\_\_

14. 1, 2, 1, 1, 2, 2, 3, 1

\_\_\_\_\_

15. 6, 8, 3, 8, 3, 9, 3

\_\_\_\_\_

16. 33, 35, 34, 33, 35, 33

\_\_\_\_\_

17. 98, 97, 98, 98, 97

\_\_\_\_\_

18. 110, 121, 121, 110,  
115, 117, 119

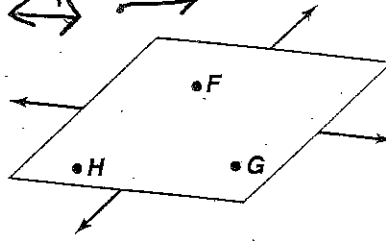
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# Review 62

*Use symbols!*

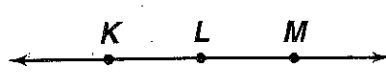
## Points, Lines, Segments, and Rays

Each point  $F$ ,  $G$ , and  $H$ , indicates an exact location in space.



Plane  $FGH$  is flat and extends indefinitely as suggested by the arrows.

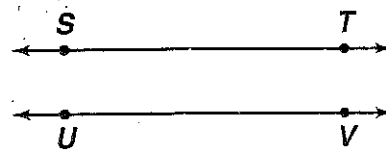
Line  $KM$  ( $\overleftrightarrow{KM}$ ) is a series of points that extends in two opposite directions without end.



Segment  $LM$  ( $\overline{LM}$ ) is part of  $\overleftrightarrow{KM}$ . The points  $L$  and  $M$  are endpoints of  $\overline{LM}$ .

Ray  $LM$  ( $\overrightarrow{LM}$ ) is part of a line. Point  $L$  is its only endpoint.

$\overleftrightarrow{ST}$  and  $\overleftrightarrow{UV}$  are parallel lines. They are in the same plane but do not intersect. They have no points in common.



Points on the same line are *collinear*. Points  $S$  and  $T$  are collinear.

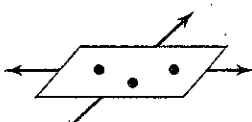
*Skew lines* are neither parallel nor intersecting.

Read each statement. Write true or false.

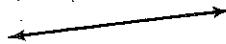
- |  |   |
|--|---|
| 1. A line has two endpoints.<br>_____                | 2. A plane has only two points.<br>_____    |
| 3. A segment is part of a line.<br>_____             | 4. A plane is flat.<br>_____                |
| 5. Collinear points lie on different lines.<br>_____ | 6. A ray has two endpoints.<br>_____        |
| 7. A ray has no beginning or end.<br>_____           | 8. A plane contains only one line.<br>_____ |
| 9. Parallel segments do not intersect.<br>_____      | 10. Skew lines intersect.<br>_____          |

Match each figure with its name.

11.



12.

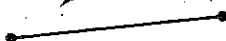


a. ray

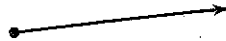
b. plane

c. line

13.



14.



d. segment

# Review 82

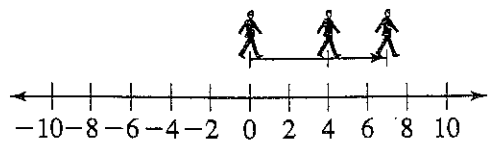
No Calculator

## Adding Integers

You can add integers on a number line.

*Example 1:* Find  $4 + 3$ .

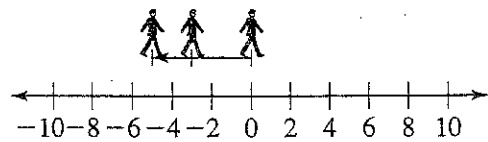
Start at 0. Move 4 units right and then 3 units right.



$4 + 3 = 7$

*Example 2:* Find  $-3 + -2$ .

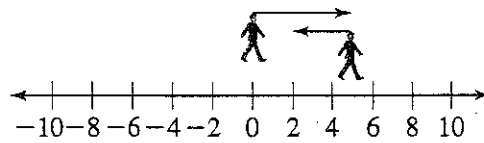
Start at 0. Move 3 units left and then 2 units left.



$-3 + (-2) = -5$

*Example 3:* Find  $5 + (-3)$ .

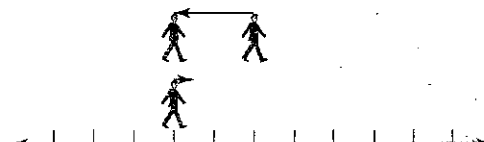
Start at 0. Move 5 units right and then 3 units left.



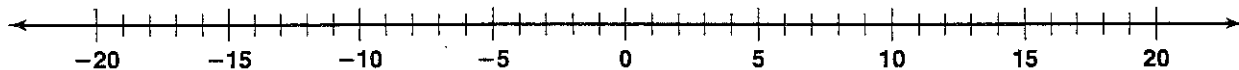
$5 + (-3) = 2$

*Example 4:* Find  $-4 + 1$ .

Start at 0. Move 4 units left and then 1 unit right.



$-4 + 1 = -3$



Use the number line to find each sum.

- |                       |                      |                      |
|-----------------------|----------------------|----------------------|
| 1. $3 + 2$ _____      | 2. $6 + 4$ _____     | 3. $-4 + (-1)$ _____ |
| 4. $-4 + (-8)$ _____  | 5. $4 + (-1)$ _____  | 6. $-6 + 8$ _____    |
| 7. $-7 + 3$ _____     | 8. $-5 + 8$ _____    | 9. $3 + 5$ _____     |
| 10. $-3 + (-5)$ _____ | 11. $3 + (-5)$ _____ | 12. $-3 + 5$ _____   |

Find each sum.

- |                        |                       |                       |
|------------------------|-----------------------|-----------------------|
| 13. $-6 + (-4)$ _____  | 14. $7 + (-2)$ _____  | 15. $-1 + (-6)$ _____ |
| 16. $9 + (-2)$ _____   | 17. $-6 + (-6)$ _____ | 18. $13 + 3$ _____    |
| 19. $-14 + (-5)$ _____ | 20. $5 + (-12)$ _____ | 21. $-9 + 9$ _____    |
| 22. $18 + (-18)$ _____ | 23. $0 + (-4)$ _____  | 24. $6 + 0$ _____     |
| 25. $15 + (-15)$ _____ | 26. $-12 + 0$ _____   | 27. $-9 + 10$ _____   |
| 28. $12 + (-11)$ _____ | 29. $-12 + 11$ _____  | 30. $2 + (-10)$ _____ |



## Review 86

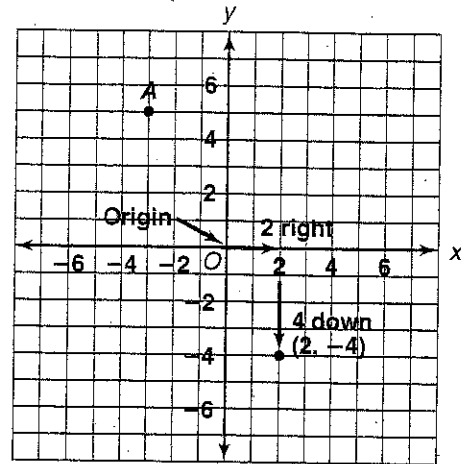
Example: Graph  $(2, -4)$ .

- 2 is the *x*-coordinate. It tells how far to move left or right from the origin.
- $-4$  is the *y*-coordinate. It tells how far to move up or down from the origin.

Find the coordinates of point A.

- Start at the origin.
- How far left or right? 3 left  
The *x*-coordinate is  $-3$ .
- How far up or down? 5 up  
The *y*-coordinate is 5.

The coordinates of point A are  $(-3, 5)$ .



Graph each point in a coordinate plane.

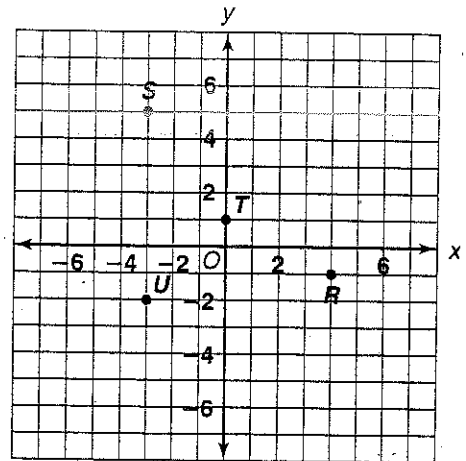
- |                |                |
|----------------|----------------|
| 1. $B(1, 6)$   | 2. $C(-4, -3)$ |
| 3. $D(0, 5)$   | 4. $E(-2, 2)$  |
| 5. $F(-1, -5)$ | 6. $G(6, -4)$  |
| 7. $H(5, 5)$   | 8. $J(4, 0)$   |
| 9. $K(-4, -4)$ | 10. $L(2, -3)$ |
| 11. $M(-2, 0)$ | 12. $N(5, -1)$ |
| 13. $P(0, -3)$ | 14. $Q(-4, 0)$ |

Find the coordinates of each point.

- |               |               |
|---------------|---------------|
| 15. $R$ _____ | 16. $S$ _____ |
| 17. $T$ _____ | 18. $U$ _____ |

Look at the coordinate grid above.

- If you travel 7 units down from  $S$ , at which point will you be located?  
\_\_\_\_\_
- If you travel 4 units right from  $T$  and 2 units down, at which point will you be located?  
\_\_\_\_\_



# Review 22

# Extra Credit

## Greatest Common Factor

You can find the *greatest common factor (GCF)* of 12 and 18 using a division ladder, factor trees, or by listing the factors. Two of these methods are shown.

*Show work on separate papers*

- ① List the factors of 12 and 18.

12: 1, 2, 3, 4, 6, 12  
18: 1, 2, 3, 6, 9, 18

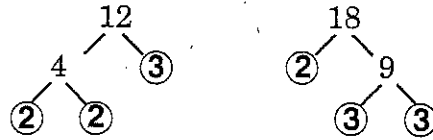
- ② Find the common factors.

12: ①, ②, ③, 4, ⑥, 12  
18: ①, ②, ③, ⑥, 9, 18

The common factors are 1, 2, 3, and 6.

- ③ Name the greatest common factor: 6.

- ① Draw factor trees.



- ② Write each prime factorization. Identify common factors.

12: ② × 2 × ③  
18: ② × ③ × 3

- ③ Multiply the common factors.  $2 \times 3 = 6$ .  
The GCF of 12 and 18 is 6.

List the factors to find the GCF of each set of numbers.

- |              |              |              |
|--------------|--------------|--------------|
| 1. 10: _____ | 2. 14: _____ | 3. 9: _____  |
| 15: _____    | 21: _____    | 21: _____    |
| GCF: _____   | GCF: _____   | GCF: _____   |
| 4. 12: _____ | 5. 15: _____ | 6. 15: _____ |
| 13: _____    | 25: _____    | 18: _____    |
| GCF: _____   | GCF: _____   | GCF: _____   |
| 7. 36: _____ | 8. 24: _____ |              |
| 48: _____    | 30: _____    |              |
| GCF: _____   | GCF: _____   |              |

Find the GCF of each set of numbers.

- |                  |                  |                   |
|------------------|------------------|-------------------|
| 9. 21, 60 _____  | 10. 15, 45 _____ | 11. 32, 40 _____  |
| 12. 54, 60 _____ | 13. 20, 50 _____ | 14. 21, 63 _____  |
| 15. 36, 40 _____ | 16. 48, 72 _____ | 17. 90, 150 _____ |

# Review 47

*Extra Credit*

Understanding Proportions

A *proportion* is an equation stating that two ratios are equal.

Does  $\frac{4}{10} = \frac{6}{15}$ ?

First, simplify each fraction.

$\frac{4}{10} = \frac{2}{5}$ , and  $\frac{6}{15} = \frac{2}{5}$ .

So,  $\frac{4}{10} = \frac{6}{15}$ .

You can use mental math to solve proportions.

Use mental math to solve  $\frac{3}{5} = \frac{15}{?}$ .

$3 \times 5 = 15$ , so  $5 \times 5 = 25$

So,  $\frac{3}{5} = \frac{15}{25}$ .

*Show work on separate paper*

Do the ratios in each pair form a proportion?

1.  $\frac{25}{100}, \frac{4}{16}$   
\_\_\_\_\_

2.  $\frac{15}{20}, \frac{4}{5}$   
\_\_\_\_\_

3.  $\frac{35}{40}, \frac{45}{50}$   
\_\_\_\_\_

4.  $\frac{54}{9}, \frac{36}{6}$   
\_\_\_\_\_

5.  $\frac{7}{11}, \frac{49}{77}$   
\_\_\_\_\_

6.  $\frac{18}{24}, \frac{24}{30}$   
\_\_\_\_\_

7.  $\frac{3}{5}, \frac{5}{3}$   
\_\_\_\_\_

8.  $\frac{9}{10}, \frac{19}{20}$   
\_\_\_\_\_

9.  $\frac{8}{24}, \frac{1}{3}$   
\_\_\_\_\_

Find the value that completes each proportion.

10.  $\frac{6}{10} = \frac{3}{?}$   
\_\_\_\_\_

11.  $\frac{8}{16} = \frac{4}{?}$   
\_\_\_\_\_

12.  $\frac{9}{21} = \frac{?}{7}$   
\_\_\_\_\_

13.  $\frac{2}{?} = \frac{10}{50}$   
\_\_\_\_\_

14.  $\frac{11}{?} = \frac{33}{15}$   
\_\_\_\_\_

15.  $\frac{?}{25} = \frac{14}{50}$   
\_\_\_\_\_

16.  $\frac{6}{30} = \frac{?}{90}$   
\_\_\_\_\_

17.  $\frac{45}{9} = \frac{25}{?}$   
\_\_\_\_\_

18.  $\frac{18}{?} = \frac{2}{9}$   
\_\_\_\_\_

19. A basketball player bounces the ball one time for every three steps. How many times will the player bounce the ball for twelve steps?  
\_\_\_\_\_

20. Four laps around the track equals one mile. How many miles does sixteen laps equal?  
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