

STA Summer Math Packet

For

Sixth Graders Entering Seventh Grade

Dear Parents and Students:

We are so proud of our sixth grade math students and look forward to having them in seventh grade! In order to maintain academic success, we must continue to learn, practice, and review, even over the summer. By taking time to review and practice essential math skills over the summer, students will create more opportunities to find success the following year, while preventing summer learning loss.

Every mathematics student will need to complete a summer math packet. This packet is due on the first day of school and will be counted as the first grade of the nine week grading period. A hard copy of the packet will be given to each student before the end of the year.....so, parents look out for them! Please wait until the summer to begin working on this packet. **For best use, it is recommended to complete 3 or 4 pages a week throughout the summer.** If you lose, misplace, or just find yourself in need of another copy, you may find one posted on renweb or you may access a copy on your child's math Moodle page. We hope this packet will help students feel more confident when returning to school in August. We look forward to seeing you all next year!

Have a wonderful summer!

Sumer Math Packet
For
Sixth Graders Entering Seventh Grade

Write the value of the underlined digit

1.) 842,976 _____

2.) 761.0325 _____

3.) Write seven and ninety-six thousandths as a decimal.

4.) Write 9.204 in words.

5.) Write 0.0000073 in words.

Comparing and Ordering Decimals

Write the decimals in order from least to greatest.

6.) 7.21 0.712 72.1 0.721 0.7

7.) 0.01010 0.10101 0.01001 0.00101

Compare using $<$, $>$, or $=$.

8.) 0.000307 _____ 0.003007

9.) -6.954 _____ -8.96

Rounding

- 10.) Round 15,763.753 to the nearest hundredth. _____
11.) Round 96.3721 to the nearest tenth. _____
12.) Round 123.9842 to the nearest whole number. _____
13.) Round 2,348,721.5295 to the nearest ten thousands. _____
14.) Round 287.261098 to the place of the underlined digit.

Adding and Subtracting Decimals

15.) $76.87 - 45.919 =$ _____ 16.) $36.283 - 9.72 =$ _____

17.) $1345.734 + 86.58 =$ _____ 18.) $9 - 3.245 =$ _____

19.) $16 + 48.792 =$ _____ 20.) $1.309 + 2 + 28.6 =$ _____

21.) $26.32 + 0.2877 =$ _____ 22.) $13.8 - 6.8412 =$ _____

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Multiply 5.43×1.8 .

- ① Multiply as if the numbers were whole numbers.

$$\begin{array}{r} 5.43 \\ \times 1.8 \\ \hline 4344 \\ + 543 \\ \hline \end{array}$$

- ② Count the total number of decimal places in the factors.

9.774 ← 3 decimal places

- ③ Place the decimal point in the product.

$38.25 \div 1.5$

- ① Rewrite the problem with a whole number divisor.

$$1.5 \overline{)38.25}$$

- ② Place the decimal point in the quotient.

$$1.5 \overline{)38.25}$$

Move 1 place each.

- ③ Divide. Then check.

$$\begin{array}{r} 25.5 \\ 15 \overline{)382.5} \\ \underline{-30} \\ 82 \\ \underline{-75} \\ 75 \\ \underline{-75} \\ 0 \end{array}$$

$$25.5 \times 15 = 382.5 \checkmark$$

Multiply to check.

Find each product.

1. $\begin{array}{r} 1.42 \\ \times 7.2 \\ \hline \end{array}$

2. $\begin{array}{r} 2.2 \\ \times 4.1 \\ \hline \end{array}$

3. $\begin{array}{r} 5.11 \\ \times 0.3 \\ \hline \end{array}$

4. $\begin{array}{r} 3.68 \\ \times 5.8 \\ \hline \end{array}$

5. 2.8×0.05

6. $1.45 \cdot 0.7$

7. $(2.07)(4.9)$

8. $9.3(0.56)$

9. $0.006(3.75)$

10. 3.8×912

To divide a decimal by a whole number, first place a decimal point in the quotient directly above the decimal point in the dividend. Then divide the same way you divide whole numbers. Sometimes you must write leading zeros after the decimal point in the quotient.

$$\begin{array}{r} \overset{\downarrow}{4.5} \\ 9 \overline{) 40.5} \\ \underline{36} \\ 45 \\ \underline{45} \\ 0 \end{array}$$

$$\begin{array}{r} \overset{\downarrow}{0.05} \\ 37 \overline{) 1.85} \\ \underline{185} \\ 0 \end{array}$$

Divide. Write leading zeros in the quotient if necessary.

29. $13 \overline{) 79.599}$

30. $22 \overline{) 12.342}$

31. $63 \overline{) 0.693}$

32. $52 \overline{) 10.452}$

Solve.

33. Pak Chuen bought a new snowboard for \$210.88. He paid for it in 8 equal payments. How much was each payment?

To divide a decimal by a decimal, follow these steps to form a simplified problem.

1. Move the decimal point to make the divisor a whole number.
2. Move the decimal in the dividend the same number of places. You may need to write a zero in the dividend.
3. Place the decimal point in the quotient and divide. Remember to write leading zeros if necessary.

Step 1	Step 2	Step 3
$0.16 \overline{) 1.2}$	$16 \overline{) 1.20}$	$16 \overline{) 120.}$
		$\underline{112}$
		80
		$\underline{80}$
		7.5

Divide until there is no remainder. Place zeros where they are needed.

34. $3.813 \div 4.1$

35. $0.002847 \div 0.73$

36. $86.9 \div 0.011$

37. $0.001071 \div 0.51$

Solve.

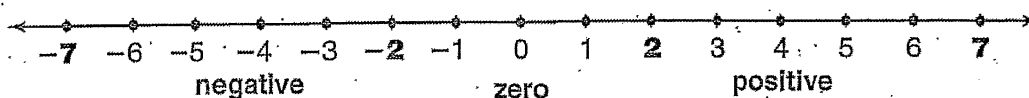
7. A sailboat traveled 60.15 kilometers up a river in 7.5 hours. What was the average distance per hour?

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Comparing and Ordering Integers

The numbers 2 and -2 are opposites. The numbers 7 and -7 are opposites.

Integers are the set of positive whole numbers, their opposites, and zero.



You can use the number line to compare integers.

-2 is less than 0.

$$-2 < 0$$

7 is greater than 2.

$$7 > 2$$

Numbers to the left are less. -2 is farther left than 0.	Numbers to the right are greater. 7 is farther right than 2.
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The **absolute value** of an integer is its distance from zero on the number line. Distance is always positive.

The absolute value of -5 is 5.

$$|-5| = 5$$

The absolute value of 3 is 3.

$$|3| = 3$$

Compare using $<$, $>$, or $=$.

1. $4 \square 2$

2. $-3 \square -2$

3. $3 \square -4$

4. $-1 \square -2$

5. $0 \square 5$

6. $0 \square -4$

7. $-6 \square 4$

8. $-8 \square -2$

9. $3 \square 0$

10. $-7 \square -10$

11. $-10 \square 10$

12. $1 \square -1$

Find each absolute value.

13. $|-6| = \underline{\hspace{2cm}}$

14. $|3| = \underline{\hspace{2cm}}$

15. $|-8| = \underline{\hspace{2cm}}$

16. $|9| = \underline{\hspace{2cm}}$

17. $|-5| = \underline{\hspace{2cm}}$

18. $|0| = \underline{\hspace{2cm}}$

19. $|6| = \underline{\hspace{2cm}}$

20. $|-10| = \underline{\hspace{2cm}}$

21. $|-20| = \underline{\hspace{2cm}}$

Order the numbers from least to greatest.

22. -4, 5, -2, 0, 1

23. 6, -3, -5, 4, -6

24. 3, -5, 4, -4, -7, 0

25. 1, 3, -7, -6, 5, -2

Adding and Subtracting Integers

Use these rules to add and subtract integers.

Adding Integers

Same Sign

- The sum of two positive integers is positive.
Example: $6 + 16 = 22$
- The sum of two negative integers is negative.
Example: $-9 + (-3) = -12$

Different Signs

- First find the absolute values of each number.
- Then subtract the lesser absolute value from the greater.
- The sum has the sign of the integer with the greater absolute value.
Example: $-10 + 9 = -1$

Subtracting Integers

- To subtract integers, add the opposite.
- Then following the rules for adding integers.
Example: $6 - (-3) = 6 + 3 = 9$

Find each sum.

- $8 + (-2)$ _____
- $-9 + 4$ _____
- $3 + (-2)$ _____
- $-1 + 11$ _____
- $12 + 13$ _____
- $-9 + 5$ _____
- $7 + 2$ _____
- $-1 + (-7)$ _____
- $-3 + 0$ _____
- $-1 + (-1)$ _____
- $6 + 5$ _____
- $3 + (-2)$ _____

Find each difference.

- $4 - 5$ _____
- $-5 - 4$ _____
- $-8 - (-7)$ _____
- $19 - (-6)$ _____
- $-10 - 12$ _____
- $-12 - 10$ _____
- $-4 - (-5)$ _____
- $-2 - (-3)$ _____
- $9 - (-7)$ _____
- $0 - 3$ _____
- $6 - 8$ _____
- $0 - (-10)$ _____

Multiplying and Dividing Integers

To multiply integers:

- If the signs are alike, the product is positive.

$$\begin{aligned} 2 \cdot 3 &= 6 \\ -2 \cdot -3 &= 6 \end{aligned}$$

- If the signs are different, the product is negative.

$$\begin{aligned} 2 \cdot -3 &= -6 \\ -2 \cdot 3 &= -6 \end{aligned}$$

To divide integers:

- If the signs are alike, the quotient is positive.

$$\begin{aligned} 6 \div 3 &= 2 \\ -6 \div -3 &= 2 \end{aligned}$$

- If the signs are different, the quotient is negative.

$$\begin{aligned} 6 \div -3 &= -2 \\ -6 \div 3 &= -2 \end{aligned}$$

Study these four examples. Write positive or negative to complete each statement.

$$\begin{aligned} 7 \cdot 3 &= 21 \\ -7 \cdot -3 &= 21 \end{aligned}$$

$$\begin{aligned} 7 \cdot -3 &= -21 \\ -7 \cdot 3 &= -21 \end{aligned}$$

1. When both integers are positive, the product is _____.
2. When one integer is positive and one is negative, the product is _____.
3. When both integers are negative, the product is _____.

$$\begin{aligned} 21 \div 3 &= 7 \\ 21 \div -3 &= -7 \end{aligned}$$

$$\begin{aligned} -21 \div -3 &= 7 \\ -21 \div 3 &= -7 \end{aligned}$$

4. When both integers are positive, the quotient is _____.
5. When both integers are negative, the quotient is _____.
6. When one integer is positive and one is negative, the quotient is _____.

Tell whether each product or quotient will be *positive* or *negative*.

7. $4 \cdot 7$

8. $-4 \cdot 7$

9. $-4 \cdot -7$

10. $4 \cdot -7$

11. $-28 \div 4$

12. $28 \div 4$

13. $-28 \div -7$

14. $28 \div -7$

15. $10 \cdot -4$

16. $-25 \div 5$

17. $-2 \cdot -2$

18. $100 \div 10$

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Computing With Integers Worksheet

Find each sum.

1.) $-14 + (-22) =$ _____

2.) $-36 + 14 =$ _____

3.) $26 + (-40) =$ _____

4.) $-38 + (-54) =$ _____

Find each difference.

5.) $-28 - (-36) =$ _____

6.) $14 - (-18) =$ _____

7.) $29 - 44 =$ _____

8.) $-18 - 36 =$ _____

Find each product or quotient.

9.) $-14 \times -6 =$ _____

10.) $(-22)(7) =$ _____

11.) $(14)(-8) =$ _____

12.) $-96 \div -12 =$ _____

13.) $-63 \div 3 =$ _____

14.) $126 \div -9 =$ _____

Solve the following.

15.) $-4 + 16 - 15 - 18 + 8 - (-10) =$ _____

16.) $-22 - 15 - 8 + 20 - (-15) =$ _____

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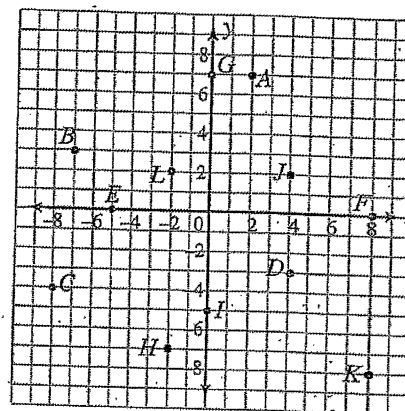
Graphing Points in Four Quadrants

Name the point with the given coordinates.

1. $(-2, 2)$ _____
2. $(8, 0)$ _____
3. $(4, -3)$ _____
4. $(-7, 3)$ _____
5. $(0, -5)$ _____
6. $(-8, -4)$ _____

Write the coordinates of each point.

7. E _____
8. A _____
9. H _____
10. K _____
11. G _____
12. J _____

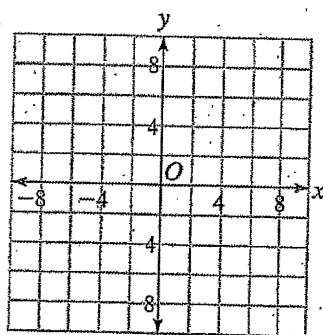


Identify the quadrant in which each point lies.

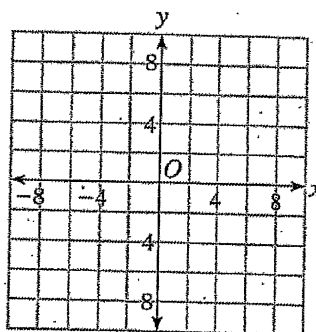
13. $(-4, 3)$ _____
14. $(7, 21)$ _____
15. $(5, -8)$ _____
16. $(-2, -7)$ _____

Graph the line containing each pair of points. Identify the line as vertical or horizontal.

17. $(3, 6), (3, -2)$



18. $(-1, 5), (3, 5)$



Find the mean, median, mode, and range for each set of data.

110. 30, 38, 42, 38, 17

Mean _____ Median _____ Mode _____ Range _____

111. 518, 581, 508, 588, 580

Mean _____ Median _____ Mode _____ Range _____

Order of Operations

112. $12 + 32 \div 4 - 15 =$

113. $45 \div 3 \cdot (10 - 5 + 2^2) =$

114. $2 + (48 \div (12 + 4)) - 16 =$

115. $50 \div ((4 \cdot 5) - (36 \div 2)) - 91 =$

Evaluating and Writing Algebraic Expressions

To evaluate an *expression*, substitute a value for the *variable* and compute.

Evaluate $5y - 8$ for $y = 7$.

$$5y - 8$$

$$5 \times 7 - 8$$

$$35 - 8 = 27$$

← Substitute y with 7.

← Compute.

You can use key words to write a word phrase for an algebraic expression.

$$a + 5 \rightarrow a \text{ plus } 5$$

$$\text{or } a \text{ increased by } 5$$

$$2n \rightarrow \text{the product of } 2 \text{ and } n$$

$$\text{or } 2 \text{ times } n$$

Evaluate each expression using the values $y = 4$, $z = 8$, and $p = 10$.

5. $3y + 6 =$ _____

6. $4z - 2 =$ _____

7. $p + 2p =$ _____

8. $3z \times z =$ _____

9. $5z - y =$ _____

10. $2p + y =$ _____

11. $8p - p =$ _____

12. $3y + 2z =$ _____

Write an algebraic expression for each word phrase.

17. x newspapers plus 10

18. 4 less than x teabags

19. 3 more than x envelopes

20. 6 times x school buses

A one-step equation contains one operation. To solve it, use the inverse operation on both sides of the equation.

$x + 2 = 9$
Subtract 2 from each side.

$$\begin{array}{r} x + 2 = 9 \\ -2 \quad -2 \\ \hline x = 7 \end{array}$$

$y - 15 = 45$
Add 15 to each side.

$$\begin{array}{r} y - 15 = 45 \\ +15 \quad +15 \\ \hline y = 60 \end{array}$$

$2x = 6$
Divide each side by 2.

$$\begin{array}{r} 2x = 6 \\ \div 2 \quad \div 2 \\ \hline x = 3 \end{array}$$

$\frac{y}{4} = 2.5$
Multiply each side by 4.

$$\begin{array}{r} \frac{y}{4} \cdot 4 = 2.5 \cdot 4 \\ \hline y = 10 \end{array}$$

Solve each equation.

68. $x + 15 = 31$

69. $y - 2 = 7$

70. $6m = 90$

A two-step equation contains two operations. To solve it, use the inverse operations on both sides of the equation.

$\frac{x}{2} - 9 = 15$
First add 9 to each side.

$$\frac{x}{2} - 9 + 9 = 15 + 9$$

$$\frac{x}{2} = 24$$

Multiply each side by 2.

$$\frac{x}{2} \cdot 2 = 24 \cdot 2$$

$$x = 48$$

$$6y + 15 = 69$$

First subtract 15 from each side.

$$6y + 15 - 15 = 69 - 15$$

$$6y = 54$$

Divide each side by 6.

$$\frac{6y}{6} = \frac{54}{6}$$

$$y = 9$$

Solve.

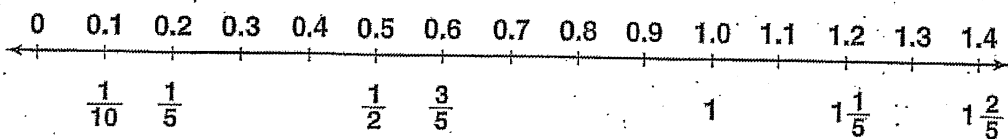
71. $8x - 15 = 17$

72. $\frac{y}{3} + 10 = 25$

73. $2w + 6 = 16$

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Fractions and Decimals



To change a fraction to a decimal, divide the numerator by the denominator.

$\frac{3}{5}$ Think: $3 \div 5$

$$\begin{array}{r} 0.6 \\ 5 \overline{)3.0} \\ \underline{-30} \\ 0 \end{array}$$

$\frac{3}{5} = 0.6$

To change a decimal to a fraction:

- ① Read the decimal to find the denominator. Write the decimal digits over 10, 100, or 1,000.

0.65 is 65 hundredths $\rightarrow \frac{65}{100}$

- ② Use the GCF to write the fraction in simplest form.

The GCF of 65 and 100 is 5.

$\frac{65}{100} = \frac{65 \div 5}{100 \div 5} = \frac{13}{20}$

Write each fraction as a decimal.

1. $\frac{4}{5} =$ _____

2. $\frac{3}{4} =$ _____

4. $\frac{1}{4} =$ _____

5. $\frac{2}{3} =$ _____

7. $\frac{5}{9} =$ _____

8. $\frac{1}{5} =$ _____

9. $\frac{3}{8} =$ _____

Write each decimal as a mixed number or fraction in simplest form.

10. $0.4 =$ _____

11. $0.75 =$ _____

13. $0.35 =$ _____

14. $2.7 =$ _____

16. $0.625 =$ _____

17. $0.78 =$ _____

Order from least to greatest.

19. $2.\overline{6}$, $\frac{13}{6}$, $2\frac{5}{6}$

21. $\frac{5}{4}$, $1\frac{4}{5}$, $1.\overline{4}$

Name _____ Class _____ Date _____

Adding and Subtracting Mixed Numbers

Follow these steps to add or subtract mixed numbers with different denominators.

- | | | | | |
|---|------|---|-----------|--|
| | Add: | $2\frac{2}{5} + 1\frac{3}{4}$ | Subtract: | $4\frac{1}{3} - 2\frac{5}{6}$ |
| ① Write the equivalent fractions with the LCD. | | $2\frac{8}{20} + 1\frac{15}{20}$ | | $4\frac{2}{6} - 2\frac{5}{6}$ |
| ② Rename, if necessary. | | | | $4\frac{2}{6} = 3 + 1\frac{2}{6} = 3\frac{8}{6}$ |
| ③ Add or subtract the whole numbers. Add or subtract the fractions. | | $2\frac{8}{20} + 1\frac{15}{20} = 3\frac{23}{20}$ | | $3\frac{8}{6} - 2\frac{5}{6} = 1\frac{3}{6}$ |
| ④ Simplify. | | $3\frac{23}{20} = 4\frac{3}{20}$ | | $1\frac{3}{6} = 1\frac{1}{2}$ |

Find each sum or difference. Write it in simplest form.

- | | | |
|---|---|--|
| 4. $2\frac{3}{5} + 1\frac{1}{10}$ _____ | 5. $2\frac{5}{6} + 3\frac{4}{9}$ _____ | 6. $5 - 3\frac{7}{10}$ _____ |
| 7. $3\frac{1}{6} - 2\frac{1}{3}$ _____ | 8. $4\frac{3}{4} - 1\frac{2}{5}$ _____ | 9. $3\frac{1}{2} + 4\frac{1}{3}$ _____ |
| 10. $3\frac{3}{10} + 1\frac{3}{5}$ _____ | 11. $6\frac{1}{3} + 7\frac{1}{4}$ _____ | 12. $4\frac{3}{5} + 6\frac{7}{10}$ _____ |
| 13. $7\frac{15}{16} - 2\frac{3}{8}$ _____ | 14. $4 - 2\frac{3}{10}$ _____ | 15. $5\frac{1}{4} - 1\frac{3}{8}$ _____ |
| 16. $2\frac{1}{2} + 5\frac{3}{5}$ _____ | 17. $7\frac{1}{4} - 3\frac{3}{5}$ _____ | 18. $5 - 2\frac{5}{8}$ _____ |
| 19. $9\frac{3}{5} + 1\frac{7}{10}$ _____ | 20. $6 - 5\frac{5}{6}$ _____ | 21. $4\frac{7}{10} + 4\frac{1}{2}$ _____ |

22. Shea cut $2\frac{1}{8}$ in. material off of the bottom of a $21\frac{1}{4}$ in. skirt. How long is the skirt now?

Name _____ Class _____ Date _____

Multiplying Fractions and Mixed Numbers

Follow these steps to multiply fractions and mixed numbers.

- ① Write the mixed numbers as improper fractions if necessary.

- ② Multiply numerators.
Multiply denominators.

- ③ Simplify, if necessary.

Multiply: $\frac{3}{4} \cdot \frac{2}{5}$

Multiply: $2\frac{2}{3} \cdot 1\frac{5}{8}$

$\frac{8}{3} \cdot \frac{13}{8}$

$\frac{3 \cdot 2}{4 \cdot 5} = \frac{6}{20}$

$\frac{8 \cdot 13}{3 \cdot 8} = \frac{104}{24}$

$\frac{6}{20} = \frac{3}{10}$

$\frac{104}{24} = 4\frac{1}{3}$

Find each product. Write the product in simplest form.

4. $\frac{5}{8} \cdot \frac{2}{5}$ _____

5. $\frac{2}{3} \cdot 9$ _____

6. $\frac{5}{12} \cdot \frac{3}{10}$ _____

7. $\frac{3}{4} \cdot 1\frac{1}{5}$ _____

8. $\frac{1}{2} \cdot 5\frac{1}{6}$ _____

9. $3\frac{4}{5} \cdot \frac{1}{6}$ _____

10. $1\frac{2}{3} \cdot 5$ _____

11. $1\frac{3}{4} \cdot 3\frac{1}{7}$ _____

12. $2\frac{3}{5} \cdot \frac{1}{4}$ _____

13. $2\frac{3}{5} \cdot \frac{7}{8}$ _____

14. $4\frac{1}{5} \cdot \frac{5}{7}$ _____

15. $\frac{1}{2} \cdot 2\frac{1}{8}$ _____

16. $3\frac{5}{6} \cdot 2\frac{1}{4}$ _____

17. $2\frac{5}{7} \cdot 1\frac{1}{3}$ _____

18. $7\frac{2}{3} \cdot 2\frac{1}{7}$ _____

19. $5\frac{1}{2} \cdot 2\frac{2}{3}$ _____

20. $\frac{5}{6} \cdot 3\frac{3}{5}$ _____

21. $7\frac{3}{4} \cdot 2$ _____

To divide mixed numbers, first change them to fractions. Then divide by multiplying by the reciprocal of the divisor.

$$3\frac{1}{2} \div 1\frac{3}{4} = \frac{7}{2} \div \frac{7}{4} = \frac{7}{2} \times \frac{4}{7} = 2 \qquad 1\frac{3}{5} \div 2\frac{2}{3} = \frac{8}{5} \div \frac{8}{3} = \frac{8}{5} \times \frac{3}{8} = \frac{3}{5}$$

Divide. Write each answer in lowest terms.

61. $2\frac{4}{5} \div 1\frac{3}{4} =$

62. $5 \div 1\frac{7}{8} =$

63. $2\frac{4}{9} \div 2\frac{3}{4} =$

64. $3\frac{3}{8} \div 12 =$

65. $4\frac{1}{6} \div 1\frac{1}{4} =$

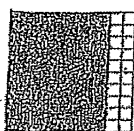
66. $6\frac{2}{5} \div 2\frac{4}{5} =$

Solve. Write each answer in lowest terms.

7. The Wing family has a tailor shop. Mrs. Wing spent $2\frac{3}{4}$ hours replacing broken zippers today. If it takes her $\frac{1}{4}$ hour to do one, how many zippers did she replace?

Fractions, Decimals, and Percents

The same number can be named as a fraction, a decimal, or a percent.



$$\frac{80}{100} = \frac{8}{10} = \frac{4}{5}$$

$$\frac{80}{100} = 0.80 = 0.8$$

$$\frac{80}{100} = 80\%$$

To find an equivalent fraction in higher terms, multiply both terms by the same number.

$$\frac{4 \times 2}{5 \times 2} = \frac{8}{10}$$

To find an equivalent fraction in lower terms, divide both terms by the same number. Use the greatest common factor (GCF) to find the lowest terms, or simplest form.

$$\frac{80 \div 2}{100 \div 2} = \frac{40}{50}$$

$$\frac{80 \div 20}{100 \div 20} = \frac{4}{5}$$

Decimals name fractions in place-value form. To change a fraction to a decimal, divide the numerator by the denominator.

$$\frac{4}{5} = 4 \div 5 = 0.80$$

Percents name fractions as a part of 100. To change a percent to a decimal, drop the percent sign, %, and move the decimal point two places to the left.

$$32\% = 0.32$$

To change a percent to a fraction, first write it as a decimal. Then change the decimal to a fraction and simplify.

$$32\% = 0.32 = \frac{32}{100} = \frac{8}{25}$$

To change a fraction to a percent, first change it to a decimal. Move the decimal point two places to the right and add a percent sign.

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

Remember—

The terms of a fraction are the numerator and denominator.

To compare fractions, first write them as equivalent fractions with like denominators.

$$\frac{2}{3} < \frac{3}{4}$$

because

$$\frac{8}{12} < \frac{9}{12}$$

Use the least common multiple (LCM) of the denominators to find equivalent fractions.

To compare decimals, compare digits in the same places. Compare tenths to tenths, hundredths to hundredths, and so on.

$$0.50 > 0.454$$

$$5 \text{ tenths} > 4 \text{ tenths}$$

Zeros trailing the last significant digit of a decimal do not change its value.

$$50\% = 0.50 = 0.5$$

$$500\% = 5.00 = 5$$

When a fraction divides into a repeating decimal, write the part after the hundredths as a fraction.

$$\frac{1}{3} = 1 \div 3 = 0.3333\ldots$$

$$0.3\overline{3} = 33\frac{1}{3}\%$$

Name: _____

Date: _____

Activity Worksheet 6-3

Percents, Fractions, and Decimals

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

	Decimal	Fraction
1.) 130%	_____	_____
2.) 452%	_____	_____
3.) 0.1%	_____	_____
4.) 240%	_____	_____
5.) 0.16%	_____	_____
6.) 345%	_____	_____
7.) 0.5%	_____	_____
8.) 0.75%	_____	_____

Finding a Percent of a Number

Example: Let's find 30 percent of 400

First change 30% to a decimal by moving the decimal point 2 places to the left.

$$30\% = 0.30$$

Then multiply.

$$0.30 \times 400 = 120$$

30% of 400 is 120.

PRACTICE

Directions: Find the missing number.

- 74. 44% of 46 is what number? _____
- 75. 30% of 70 is what number? _____
- 76. 73% of 79 is what number? _____
- 77. 24% of 100 is what number? _____
- 78. 11% of 18 is what number? _____
- 79. 95% of 49 is what number? _____

Using Proportional Reasoning

Solving a proportion means finding a missing part of the proportion. You can use unit rates to solve a proportion. First find the unit rate. Then multiply to solve the proportion.

Shawn filled 8 bags of leaves in 2 hours. At this rate, how many bags would he fill in 6 hours?

- ① Find a unit rate for the number of bags per hour. Divide by the denominator.

$$\frac{8 \text{ bags}}{2 \text{ hours}} = \frac{8 \text{ bags} \div 2}{2 \text{ hours} \div 2} = \frac{4 \text{ bags}}{1 \text{ hour}} \quad \text{The unit rate is 4 bags per hour.}$$

- ② Multiply the unit rate by 6 to find the number of bags he will fill in 6 hours.

Unit rate	Number of hours	Total
↓	↓	↓
4	× 6	= 24

At this rate, Shawn can fill 24 bags in 6 hours.

If two ratios form a proportion, the **cross products** are equal.

Solve. $\frac{5}{15} = \frac{n}{3}$

- ① Write the cross products. $5 \cdot 3 = 15 \cdot n$
 ② Simplify. $15 = 15n$
 ③ Solve the equation. $n = 1$

Solve.

- The bookstore advertises 5 notebooks for \$7.75. At this rate, how much will 7 notebooks cost? _____
- Leroy can lay 144 bricks in 3 hours. At this rate, how many bricks can he lay in 7 hours? _____

Solve each proportion using cross products.

3. $\frac{4}{24} = \frac{n}{6}$

4. $\frac{30}{5} = \frac{6}{n}$

5. $\frac{n}{6} = \frac{27}{9}$

Solve each proportion.

6. $\frac{50}{70} = \frac{n}{7}$ _____

7. $\frac{14}{7} = \frac{6}{n}$ _____

8. $\frac{n}{15} = \frac{2}{5}$ _____

9. $\frac{4}{10} = \frac{n}{15}$ _____

10. $\frac{4}{200} = \frac{n}{100}$ _____

11. $\frac{6}{n} = \frac{5}{10}$ _____

12. $\frac{32}{22} = \frac{96}{n}$ _____

13. $\frac{6}{3} = \frac{n}{5}$ _____

14. $\frac{2}{n} = \frac{4}{10}$ _____

RATIOS, PROPORTIONS, & PERCENTS

Find the unit rate.

80. $\frac{\$56}{8\text{lbs}} = \underline{\hspace{2cm}}$ 81. 7 phone calls in 2 hours = $\underline{\hspace{2cm}}$

Write the ratio as a fraction in simplest form.

82. 65 to 130 = $\underline{\hspace{2cm}}$ 83. $\frac{18}{63} = \underline{\hspace{2cm}}$

Solve each proportion by cross-multiplying.

84. $\frac{20}{x} = \frac{16}{5}$ 85. $\frac{y}{22} = \frac{11}{5.5}$ 86. $\frac{3.6}{3} = \frac{b}{14.4}$

Find each value.

87. 40% of 25 is what number? $\underline{\hspace{2cm}}$

88. 18 is 75% of what number? $\underline{\hspace{2cm}}$

89. What percent of 600 is 180? $\underline{\hspace{2cm}}$

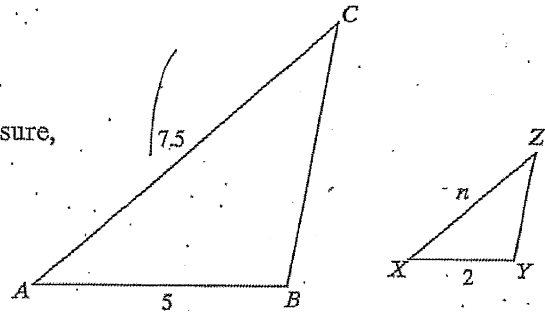
90. The cost of a meal is \$35.27 and you leave an 18% tip. What is the total cost of the meal? Round to the nearest cent. $\underline{\hspace{2cm}}$

Remember:
 $\frac{\text{is}}{\text{of}} = \frac{\%}{100}$

Using Similar Figures

Two polygons are **similar**, if

- corresponding angles have the same measure, and
- the lengths of corresponding sides are proportional.



$$\triangle ABC \sim \triangle XYZ$$

You can use proportions to find missing lengths in similar (\sim) figures.

- ① Find corresponding sides.
- ② Write ratios of their lengths in a proportion.
- ③ Substitute the information you know.
- ④ Write cross products. Solve for n .

\overline{AB} corresponds to \overline{XY} .
 \overline{AC} corresponds to \overline{XZ} .
 \overline{BC} corresponds to \overline{YZ} .

$$\frac{AB}{XY} = \frac{AC}{XZ}$$

$$\frac{5}{2} = \frac{7.5}{n}$$

$$5n = 2 \cdot 7.5$$

$$n = 3$$

The length of \overline{XZ} is 3 units.

The figures are similar. Find the corresponding sides.
 Then complete the proportion and solve for n .

1. \overline{AB} corresponds to _____.

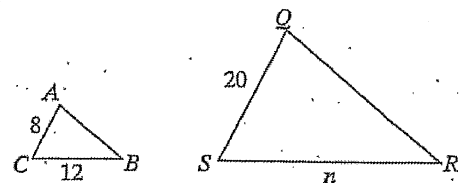
\overline{BC} corresponds to _____.

\overline{CA} corresponds to _____.

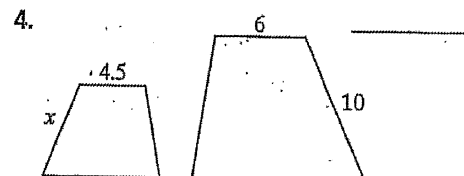
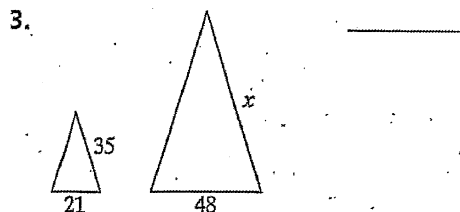
2. $\frac{CA}{SQ} = \frac{\boxed{}}{RS}$

$$\frac{8}{20} = \frac{\boxed{}}{\boxed{}}$$

$n = \underline{\hspace{2cm}}$



The pairs of figures below are similar. Find the value of each variable.



Find the GCF or LCM for each.

127) The GCF of 24 & 32 is _____.

128) The LCM of 12 & 16 is _____.

129) The GCF of 18, 30, & 60 is _____.

130) The LCM of 3, 12, & 15 is _____.

Write the prime factorization of each number.

131) 54 = _____

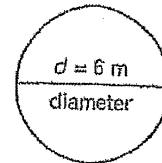
132) 57 = _____

The circumference (C) of a circle is the distance around it. To find the circumference, multiply the diameter by π (pi). Pi is a number that is approximately equal to 3.14, or $\frac{22}{7}$.

$$C = \pi d$$

$$C = 3.14 \cdot 6$$

$$C = 18.84 \text{ meters}$$



Solve each problem.

- 35) A wreath has a diameter of 60 centimeters. What is its circumference?

- 36) A pipe has a radius of 3.5 centimeters. What is its circumference?

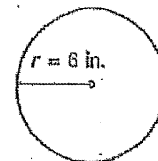
To find the area of a circle, multiply pi (π) times the radius squared.

$$A = \pi r^2$$

$$A = \pi \cdot 6^2$$

$$A = 3.14 \cdot 36$$

$$A = 113.04 \text{ in.}^2$$



Solve.

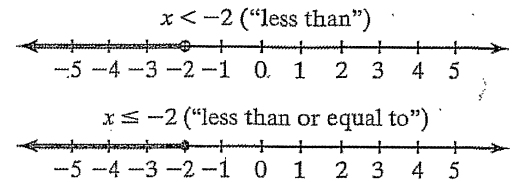
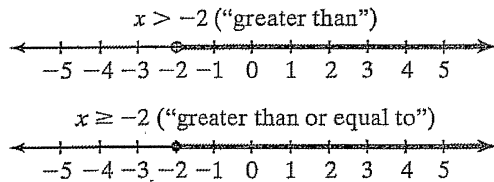
- 37) A restaurant serves pancakes that are 8 inches in diameter. What is the area of a pancake?

- 38) A farmer found a mysterious flattened area in his wheatfield. It was a circle with a radius of 24 feet. What was its area?

Graphing and Writing Inequalities

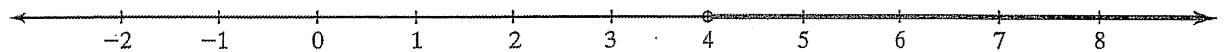
Two expressions separated by an inequality sign form an **inequality**. An inequality shows that the two expressions *are not* equal. Unlike the equations you have worked with, an inequality has many solutions.

The **solutions of an inequality** are the values that make the inequality true. They can be graphed on a number line. Use a closed circle (\bullet) for \leq and \geq and an open circle (\circ) for $>$ and $<$. For example:



Graph the inequality $x > 4$.

The inequality is read as "x is greater than 4." Since all numbers to the right of 4 are greater than 4, you can draw an arrow from 4 to the right. Since 4 is not greater than itself, use an open circle on 4.

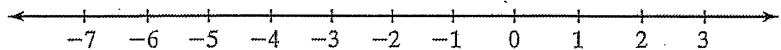


1. Graph the inequality $x \leq -3$.

a. Write the inequality in words. _____

b. Will the circle at -3 be open or closed? _____

c. Graph the solution.

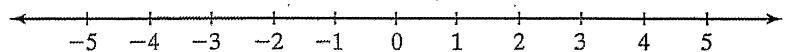


2. Graph the inequality $x \geq -1$.

a. Write the inequality in words. _____

b. Will the circle at -1 be open or closed? _____

c. Graph the solution.

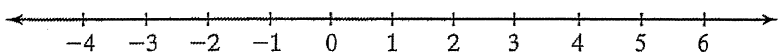


3. Graph the inequality $x < 3$.

a. Write the inequality in words. _____

b. Will the circle at 3 be open or closed? _____

c. Graph the solution.



Solving Inequalities by Adding or Subtracting

To solve an inequality you can add the same number to or subtract it from each side of the inequality.

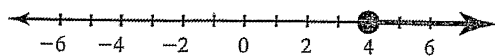
Solve $x + 5 \geq 9$. Graph the solution.

$$x + 5 \geq 9$$

$$x + 5 - 5 \geq 9 - 5 \quad \text{Subtract 5 from each side.}$$

$$x \geq 4 \quad \text{Simplify.}$$

Graph:



Solve $y - 3 < 2$.

Graph the solution.

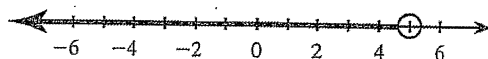
$$y - 3 < 2$$

$$y - 3 + 3 < 2 + 3$$

$$y < 5$$

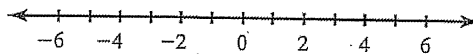
Add 3 to each side.
Simplify.

Graph:

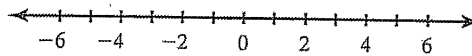


Solve each inequality. Graph the solution.

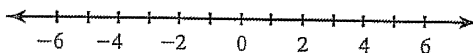
1. $2 + a > 6$ _____



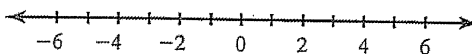
2. $-4 + w \leq 0$ _____



3. $3 + a \geq 8$ _____



4. $w + 1 \leq 4$ _____



Solving Inequalities by Multiplying or Dividing

To solve an inequality you can multiply or divide each side by the same number. However, if the number is negative, you must also reverse the direction of the inequality sign.

Solve $-4y \geq 16$. Graph the solution.

$$-4y \geq 16$$

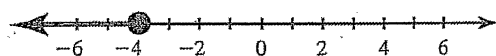
$$\frac{-4y}{-4} \leq \frac{16}{-4}$$

Divide each side by -4 .

Reverse the direction of the inequality symbol.

$$y \leq -4 \quad \text{Simplify.}$$

Graph:



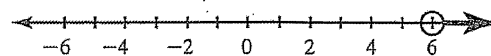
Solve $\frac{w}{3} > 2$. Graph the solution.

$$\frac{w}{3} > 2$$

$$(3)\frac{w}{3} > 2(3) \quad \text{Multiply each side by 3.}$$

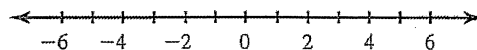
$$w > 6 \quad \text{Simplify.}$$

Graph:

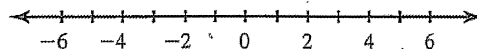


Solve each inequality. Graph the solution.

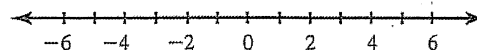
1. $2a > 10$ _____



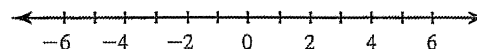
2. $-4w < 16$ _____



3. $\frac{r}{2} \geq -2$ _____



4. $18 \leq 9a$ _____



5. $\frac{a}{3} < 1$ _____

