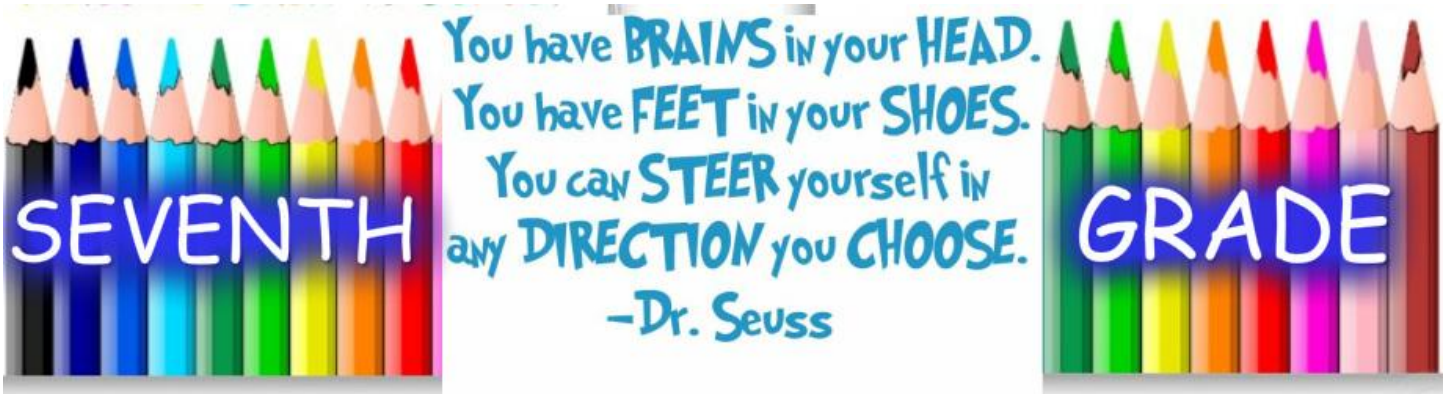


Mrs. Melia's Math Class

Dear Students,

This packet is part one of your summer assignment. It is designed to help you retain the information you learned in 6th grade. For this practice to be effective, work on these exercises for 15 minutes per day. On the top of each page or work or your packet please write the date to remind yourself to space out the packet during the summer. Do not try to complete this packet in one day. All work should be completed on loose leaf paper and will be collected on the first full day of school. It is not necessary to print out this packet, however, feel free to do so if it is easier for you. Any loose leaf should be stapled to the packet. Also some topics may be new to you. Allow yourself to be challenged. Try it out and do your best. Remember to always be resourceful. If you forgot a topic, look it up online or in an old notebook. The packet will be graded as your first homework grade.

Part two (for those in accelerated math) will be to create a mini-lesson on any of the following topics and complete each of the four parts to be handed in and graded as your first project grade.

Topics:	**Parts of the Lesson:**
1. Adding, Subtracting, Multiplying and Dividing Fractions and Mixed Numbers 2. Solving and writing two step equations 3. Adding, Subtracting, Multiplying and Dividing with Inequalities	1. Introduction 2. Steps, procedure and notes needed to teach the topic. 3. Examples with work shown to be taught to the class. 4. Activity such as a worksheet, game (can be from online) etc.

Have a safe, healthy and fun filled summer!

Mrs. Melia

Multiply decimals the same way you multiply whole numbers. The number of decimal places in the product is equal to the sum of the number of decimal places in the factors. You may need to write leading zeros in the product before placing the decimal point.

$$\begin{array}{r} 1.43 \leftarrow 2 \text{ places} \\ \times 12 \leftarrow 0 \text{ places} \\ \hline 17.16 \leftarrow 2 \text{ places} \end{array} \qquad \begin{array}{r} 0.005 \leftarrow 3 \text{ places} \\ \times 0.5 \leftarrow 1 \text{ place} \\ \hline 0.0025 \leftarrow 4 \text{ places} \end{array}$$

Multiply. Write leading zeros in the product if necessary.

1. $\begin{array}{r} 5.36 \\ \times 4 \\ \hline \end{array}$
2. $\begin{array}{r} 0.16 \\ \times 27 \\ \hline \end{array}$
3. $\begin{array}{r} 0.025 \\ \times 365 \\ \hline \end{array}$
4. $\begin{array}{r} 9.6 \\ \times 1.2 \\ \hline \end{array}$
5. $\begin{array}{r} 1.75 \\ \times 5.9 \\ \hline \end{array}$

11. $\begin{array}{r} 3.81 \\ \times 0.04 \\ \hline \end{array}$
12. $\begin{array}{r} 0.0212 \\ \times 0.36 \\ \hline \end{array}$
13. $\begin{array}{r} 4.007 \\ \times 6.24 \\ \hline \end{array}$
14. $\begin{array}{r} 0.658 \\ \times 0.532 \\ \hline \end{array}$
15. $\begin{array}{r} 5.783 \\ \times 0.961 \\ \hline \end{array}$

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.

$$\begin{array}{r} 4.5 \\ 9\overline{)40.5} \\ 36 \\ \hline 45 \\ 45 \\ \hline \end{array} \qquad \begin{array}{r} 0.05 \\ 37\overline{)1.85} \\ 185 \\ \hline \end{array}$$

Divide. Write leading zeros in the quotient if necessary.

5. $13\overline{)79.599}$

6. $22\overline{)12.342}$

7. $63\overline{)0.693}$

8. $52\overline{)10.452}$

Solve.

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

2. A monthly lift pass at Sneak Peak costs $145.50 and is good for 30 days. If Pak Chuen used it every day for a month, what would be the cost per day?

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
$0.16\overline{)1.2}$	$16.\overline{)1.20}$	$16.\overline{)120.}$

```
      7.5
16.)120.
   112
    80
    80
```

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

1. $0.4\overline{)3.5}$
2. $0.8\overline{)0.28}$
3. $1.5\overline{)0.6}$
4. $2.4\overline{)5.4}$

Solve.

1. A sailboat traveled 60.15 kilometers up a river in 7.5 hours. What was the average distance per hour?
2. A boat is cruising at a speed of 8.3 kilometers per hour. How long will it take to travel a distance of 8.715 kilometers?

To add mixed numbers, first find equivalent fractions with like denominators. Then add, first the fractions and then the whole numbers. Sometimes you must regroup a sum in order to write it in lowest terms.

$$1\frac{5}{6} = 1\frac{10}{12}$$
$$+\,2\frac{11}{12} = 2\frac{11}{12}$$
$$3\frac{21}{12} = 4\frac{9}{12} = 4\frac{3}{4}$$

Add. Write each sum in lowest terms.

1. $3\frac{3}{5} + 2\frac{1}{10}$

2. $9\frac{1}{4} + 8\frac{1}{6}$

3. $2\frac{2}{16} + 1\frac{7}{8}$

4. $6\frac{2}{3} + 4\frac{7}{12}$

9. $2\frac{2}{12} + 2\frac{7}{18}$

10. $6\frac{5}{9} + 4\frac{1}{2}$

11. $3\frac{7}{10} + 5\frac{1}{4}$

12. $1\frac{3}{24} + 2\frac{3}{16}$

Solve.

1. Bert skied trails that were $2\frac{1}{5}$ miles, $3\frac{3}{10}$ miles, and $5\frac{1}{2}$ miles long. How many miles did he ski in all?

2. Bert skied for $1\frac{3}{4}$ hours Friday night, $5\frac{1}{3}$ hours Saturday, and $3\frac{1}{6}$ hours Sunday afternoon. How many hours did he spend skiing that weekend?

To find a fraction of a whole number or a mixed number, first change the number to a fraction. If both numbers are mixed numbers, change both to fractions.

$\frac{5}{6}$ of $10 = \frac{5}{6} \times \frac{10}{1} = \frac{5 \times \overset{5}{\cancel{10}}}{\underset{3}{\cancel{6}} \times 1} = \frac{25}{3} = 8\frac{1}{3}$ $\qquad$ $\frac{2}{3}$ of $2\frac{3}{4} = \frac{2}{3} \times \frac{11}{4} = \frac{\overset{1}{\cancel{2}} \times 11}{3 \times \underset{2}{\cancel{4}}} = \frac{11}{6} = 1\frac{5}{6}$

Multiply. Use the shortcut if possible. Write each product in lowest terms.

7. $\frac{4}{5} \times 60 =$

8. $\frac{4}{5} \times 5\frac{5}{8} =$

9. $7\frac{8}{9} \times 2\frac{2}{5} =$

10. $2\frac{2}{3} \times 7\frac{6}{7} =$

11. $\frac{4}{9} \times 12 =$

12. $4\frac{5}{9} \times 6\frac{3}{10} =$

Solve. Write each answer in lowest terms.

1. Ms. Tran has $\frac{1}{3}$ of a tank of gas in her car. If the tank holds $14\frac{1}{3}$ gallons, about how much gas does she have?

2. The trip to work takes Ms. Tran $\frac{7}{12}$ of an hour. If she makes this trip 10 times a week, how much time does she spend commuting?

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

$3\frac{1}{2} \div 1\frac{3}{4} = \frac{7}{2} \div \frac{7}{4} = \frac{\cancel{7}^{1}}{\cancel{2}_{1}} \times \frac{\cancel{4}^{2}}{\cancel{7}_{1}} = 2$

$1\frac{3}{5} \div 2\frac{2}{3} = \frac{8}{5} \div \frac{8}{3} = \frac{\cancel{8}^{1}}{5} \times \frac{3}{\cancel{8}_{1}} = \frac{3}{5}$

Divide. Write each answer in lowest terms.

7. $2\frac{4}{5} \div 1\frac{3}{4} =$

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

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

10. $3\frac{3}{8} \div 12 =$

11. $4\frac{1}{6} \div 1\frac{1}{4} =$

12. $6\frac{2}{5} \div 2\frac{4}{5} =$

Solve. Write each answer in lowest terms.

1. 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?

2. Mr. Wing has 36 yards of wool fabric. A sports jacket takes $1\frac{4}{5}$ yards to make. How many jackets could Mr. Wing make with the fabric?

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.

$x + 2 = 9$
$-2 \quad -2$
$x = 7$

$y - 15 = 45$

Add 15 to each side.

$y - 15 = 45$
$+15 \quad +15$
$y = 60$

$2x = 6$

Divide each side by 2.

$\frac{2x}{2} = \frac{6}{2}$
$x = 3$

$\frac{y}{4} = 2.5$

Multiply each side by 4.

$\frac{y}{4} \cdot 4 = 2.5 \cdot 4$
$y = 10$

Solve each equation.

1. $x + 15 = 31$
2. $y - 2 = 7$
3. $6m = 90$

7. $6.75 + b = 7.5$
8. $\frac{n}{12} = 10$
9. $r + 21 = 24$

Write an equation for each problem and solve.

1. The sum of a and 35 is 100. What is a?
2. The product of x and 4 is 100. What is x?

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.

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

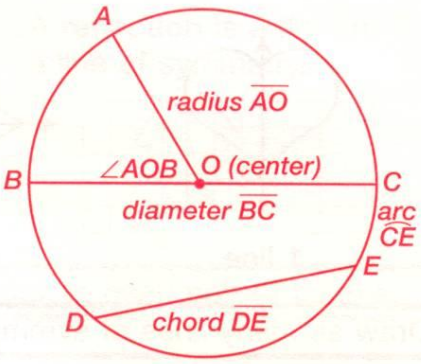
$y = 9$

Solve.

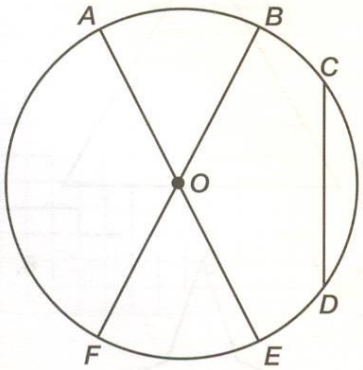
1. $8x - 15 = 17$
2. $\frac{y}{3} + 10 = 25$
3. $2w + 6 = 16$

A **circle** is a set of points that are equidistant from a center point.

A **radius** *(r)* is a line segment from the center to a point on the circle. A **diameter** *(d)* is a line segment that passes through the center and has both endpoints on the circle. A **chord** is any line segment that has endpoints on the circle. An **arc** is a part of the circle between two points. A **central angle** is any angle whose vertex is the center of the circle. All the way around a circle measures 360°.



Use the figure below to complete the following.



1. Name four radii. _____
2. Name two diameters. _____
3. Name three chords. _____
4. Name five arcs. _____
5. Name four central angles. _____
6. Name a pair of congruent central angles. _____
7. What is the diameter if the radius is—

   5 feet? _____ 3.6 meters? _____ 27.25 miles? _____
8. What is the radius if the diameter is —

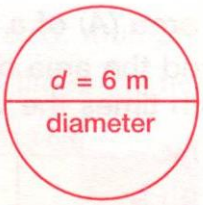
   12 inches? _____ 18 centimeters? _____ 9 yards? _____

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 $\frac{22}{7}$.

$C = \pi d$

$C = 3.14 \cdot 6$

$C = 18.84$ meters



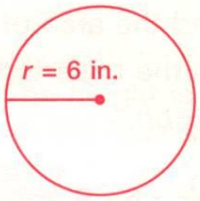
Solve each problem.

1. A wreath has a diameter of 60 centimeters. What is its circumference?

2. 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.

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

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

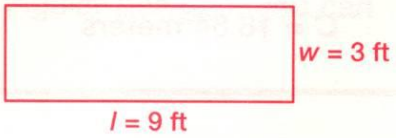
The **area** *(A)* of a polygon is the number of **square units** (n^2) it takes to cover it.

To find the area of a rectangle, multiply the length times the width.

$A = lw$

$A = 9 \cdot 3$

$A = 27 \text{ ft}^2$

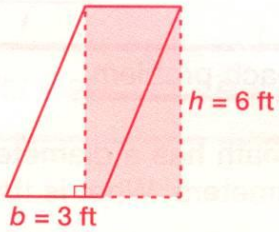


To find the area of a parallelogram, multiply the base times the height. The height is the **altitude**, or distance between the bases.

$A = bh$

$A = 3 \cdot 6$

$A = 18 \text{ ft}^2$



Solve each problem.

1. A rectangular dance floor is 30 feet wide and 70 feet long. What is the area of the dance floor?

2. A parking lot is a parallelogram with a base of 600 yards and a height of 200 yards. What is its area?

3. Logan County is a square. It has a side that is 15.4 miles long. What is its area?

4. A desk is 30 inches wide and 54 inches long. What is the area of the desktop?

5. A kitchen countertop is a parallelogram with a base of 80 inches and a height of 42 inches. What is the area of the countertop?

6. A square ceramic tile has an area of 20.25 square inches. How long is one side?

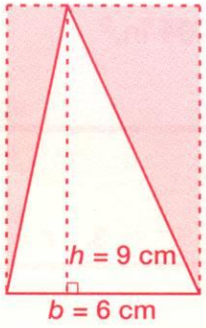
To find the area of a triangle, multiply $\frac{1}{2}$ times the base times the height.

$A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 6 \cdot 9$

$A = \frac{1}{2}(54)$

$A = 27 \text{ cm}^2$



To find the area of a trapezoid, multiply $\frac{1}{2}$ times the sum of the bases times the height.

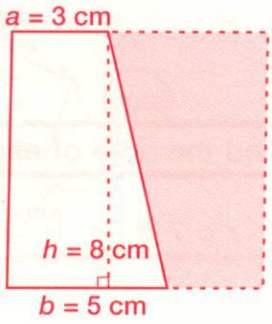
$A = \frac{1}{2}(a + b)h$

$A = \frac{1}{2} \cdot (3 + 5) \cdot 8$

$A = \frac{1}{2} \cdot (8) \cdot 8$

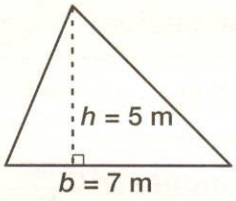
$A = \frac{1}{2} \cdot 64$

$A = 32 \text{ cm}^2$



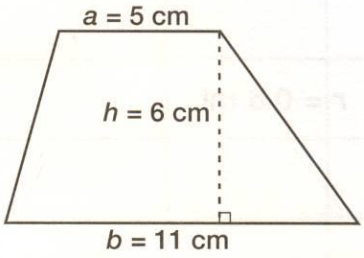
Find the area of each figure.

1.



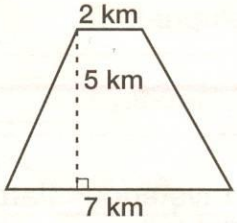
$A =$ _____

2.



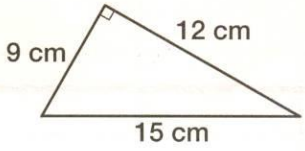
$A =$ _____

4.



$A =$ _____

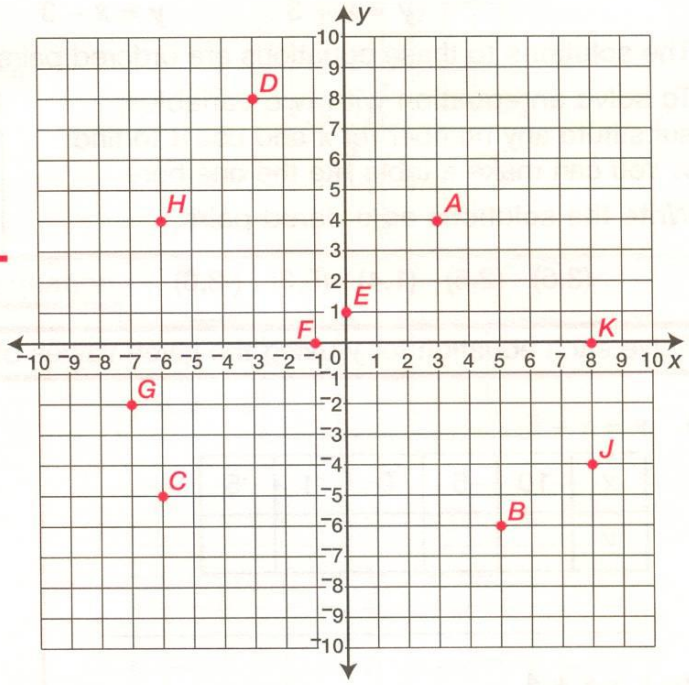
5.



$A =$ _____

An **ordered pair** of integers, such as (2,3), names the location of a point on a **coordinate plane.**

The first integer names the location on the ***x*-axis.** The second integer names the location on the ***y*-axis.** The axes intersect at the **origin** (0,0) and divide the plane into four **quadrants.**

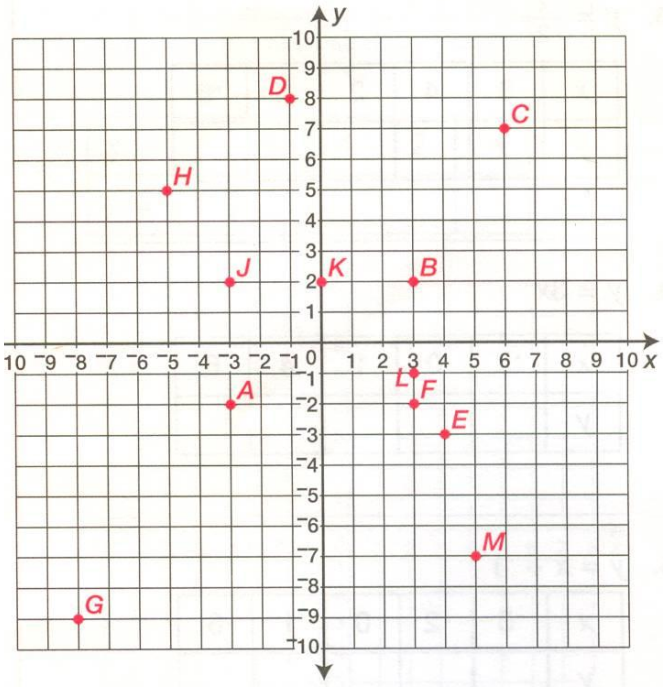


Name the ordered pair for each point.

1. *A* _____
2. *B* _____
3. *C* _____
4. *D* _____
5. *E* _____

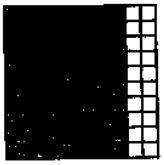
Name the point for each ordered pair on the coordinate plane below.

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



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.

$$\frac{80 \div 2}{100 \div 2} = \frac{40}{50} \qquad \frac{80 \div 20}{100 \div 20} = \frac{4}{5}$$

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 tenths > 4 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.

$\frac{1}{3} = 1 \div 3 = 0.3333\ldots$
$0.33\overline{3} = 33\frac{1}{3}\%$

Read each problem. Circle the letter of the best answer.

1 A jellyroll is sliced into 12 equal pieces at a bakery. Winton bought 4 pieces. ***About*** what percent of the jellyroll is that?

A 25%
C 35%
B 33.3%
D 40%

Did you choose B? That's correct. Four of 12 pieces equals $\frac{4}{12}$ or $\frac{1}{3}$. Divide to find a decimal: $1 \div 3 = 0.333...$ Change the decimal to a percent: $0.333... = 33\frac{1}{3}\%$, or about 33.3%.

2 Yvonne had 25 stamps. She used 20 of them. Which represents the portion of the stamps Yvonne used?

F 0.4
H $\frac{4}{5}$
G 60%
J $\frac{15}{20}$

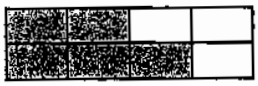
3 Ramón cut three lengths of rope. The pieces were 5.35, 5.46, and 5.43 meters long. Which list shows the lengths in order from least to greatest?

A 5.35, 5.43, 5.46
B 5.43, 5.35, 5.46
C 5.35, 5.46, 5.43
D 5.46, 5.43, 5.35

4 Of the 40 students in Irene's class, 30% are girls. How many girls are in Irene's class?

F 10
H 15
G 12
J 30

5 Look at this figure.



Which of these does ***not*** name the shaded part?

A 0.582
C 0.625
B $\frac{5}{8}$
D $62\frac{1}{2}\%$

6 This table shows how much four people earned and the amount of their earnings they spent.

Person	*Earned*	*Spent*
Fred	$80	$35
Marla	90	35
Juana	100	35
Barry	110	35

Who spent 35% of his or her earnings?

F Fred
H Juana
G Marla
J Barry

7 Hassan ran $\frac{2}{3}$ mile on Tuesday, $\frac{5}{8}$ mile on Wednesday, $\frac{3}{4}$ mile on Thursday, and $\frac{7}{12}$ mile Friday. On which day did he run the farthest?

A Tuesday
C Thursday
B Wednesday
D Friday

8 A sign at a store said all purchases were 40% off. Which is another way this number could have been written?

F $\frac{1}{5}$ off
H $\frac{3}{10}$ off
G $\frac{1}{4}$ off
J $\frac{2}{5}$ off

1 Data

- A **table** is an organized display of **data,** or information.

  This table shows one student's scores on some math tests.

BETHANY'S MATH SCORES	
Test	*Score*
1	86
2	78
3	88
4	78
5	90

To find the **mean,** or average, of a set of data, add the values and divide the sum by the number of values.

What is Bethany's mean test score?

$$86 + 78 + 88 + 78 + 90 = 420$$

$$420 \div 5 = 84$$

Bethany's mean test score is 84.

- To find the **median** in a set of data, first arrange the data in order from smallest to largest. Then look for the number in the middle.

What is Bethany's median test score?

78, 78, (86), 88, 90

Bethany's median score is 86.

Had there been an even number of scores, the median would have been the arithmetic mean of the 2 middle scores.

To find the **mode** of a set of data, look for the value that appears most often.

78, 78, 86, 88, 90

In this set of test scores, the score of 78 appears twice and the rest of the scores appear only once each. So the mode of Bethany's scores is 78.

Remember—

Tables contain data in columns, which go up and down, and rows, which go from left to right. Be sure to look in the correct row and column for the data you need to solve a problem.

The **range** of a set of data is the difference between the largest and smallest values.

highest score = 90

lowest score = 78

90 − 78 = 12

The range of the scores is 12 points.

The word ***median*** means *middle.* There should be an equal number of scores to the left and right of the median.

If there is an even number of scores, the median is the mean of the two middle scores.

1, 2, 3, 4

2 + 3 = 5

5 ÷ 2 = 2.5

The median is 2.5.

A set of data has no mode if each value occurs only once.

Read each problem. Circle the letter of the best answer.

1 This set of data shows the number of runs-batted-in (RBI) by five top players on the seventh-grade baseball team.

32, 28, 20, 33, 22

How many of the players were above the mean number of RBIs?

A one **C** three

B two **D** four

Did you choose C? That's correct. First find the mean. Add the values: 32 + 28 + 20 + 33 + 22 = 135. Divide: 135 ÷ 5 = 27. Compare the mean to the values: 32, 28, and 33 are greater than 27.

2 In question 1, how does the mean compare to the median RBIs?

F It's 1 less. **H** It's the same.

G It's 1 more. **J** It's 5 less.

Use this table to answer questions 3 and 4.

TREES SOLD AT A GARDEN CENTER

Kind of Tree	*Price*	*Number Sold*
Red Maple	$22	6
Pin Oak	$36	4
Sweet Gum	$45	3
Blue Spruce	$37	4

3 What is the mean price of a tree?

A $23 **C** $35

B $28 **D** $140

4 Which kind of tree was the most money taken in on?

F Red Maple **H** Sweet Gum

G Pin Oak **J** Blue Spruce

Use this table to answer questions 5–8.

SAILING SHIPS

Name of Ship	*Length in Feet*
Europa	185
Faire Jeanne	110
Grand Nellie	65
Jolly Rover	60
Pride of Many	65

5 How much longer is the *Faire Jeanne* than the *Jolly Rover?*

A 50 feet **C** 75 feet

B 55 feet **D** 175 feet

6 What is the range of the lengths of the ships?

F 25 feet **H** 97 feet

G 65 feet **J** 125 feet

7 The *N.E. Sagres* is a 293-foot-long sailing ship. What fraction of the ships in the table are less than half the length of the *N.E. Sagres?*

A $\frac{1}{5}$ **C** $\frac{3}{5}$

B $\frac{2}{5}$ **D** $\frac{4}{5}$

8 Which statement about the lengths of the ships in the table is true?

F The median is greater than the mean.

G The mean and median are the same.

H The mode is greater than the mean.

J The median and the mode are the same.

3 Probability

Probability is the chance that an event will happen. An **event** is also called an **outcome.**

What is the probability of getting heads when tossing a coin?

There are 2 possible outcomes to this event: heads or tails. There is only 1 favorable outcome: heads. So the probability of getting heads is 1 out of 2.

Each flip or pick is an **independent event.**

If the coin is tossed a second time, the probability of landing on heads is still 1 out of 2.

Paige has 2 red T-shirts and 3 white T-shirts in a drawer. If she picks one at random, what is the probability that it will be a white T-shirt?

$$P(\text{white}) = \frac{3 \text{ (favorable outcomes)}}{5 \text{ (possible outcomes)}}$$

The probability of picking a white T-shirt is 3 out of 5. If Paige picked from the same set again, the probability of picking a white T-shirt is still 3 out of 5.

What is the probability of 2 people picking a white T-shirt from a set of 2 red shirts and 3 white shirts?

$$P(\text{white}) \text{ and } P(\text{white}) = \frac{3}{5} \times \frac{3}{5} = \frac{9}{25}$$

The probability of 2 people picking white shirts is $\frac{9}{25}$.

Probability can be written as a fraction or as a decimal.

$$\frac{1}{2} = 0.5$$

This is the probability of 1 out of 2.

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

This is the probability of 3 out of 5.

Remember—

An **event,** or outcome, is something that can happen, such as heads or tails when flipping a coin.

An event is **certain** if it definitely will happen. The probability that a number cube numbered 1 to 6 will land on a number from 1 to 6 is a certainty.

An event is **impossible** if it definitely will not happen. The probability that a number cube numbered 1 to 6 will land on 7 is an impossibility.

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

$$\frac{3}{5} = 5\overline{)\,3.0}\quad \begin{array}{r} 0.6 \\ \underline{3\,0} \end{array}$$

To change a decimal to fraction, put the decimal number over the place value of the digit in the rightmost column. Then reduce to lowest terms.

$$0.6 = \frac{6}{10} = \frac{3}{5}$$

Read each problem. Circle the letter of the best answer.

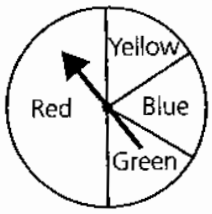
1 Allison is going to flip a quarter 50 times. Which is the best estimate of the probability that all 50 flips will be heads?

A 0 **C** 0.5

B 0.25 **D** 1

Did you select A? That's right. The probability of getting heads is $\frac{1}{2}$, or 0.5. Multiply to find the probability of getting 2 heads in a row: $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$, or 0.25. By the 8th flip, the probability is $\frac{1}{256}$, or 0.003906. By the 50th flip, the probability is even smaller. So 0 is a good estimate.

2 Yevgeny is going to spin the arrow 20 times in a row. How likely is it that the arrow will land on red all 20 times?



F It is certain that it will land on Red all 20 times.

G It will most likely land on Red all 20 times.

H It will most likely ***not*** land on Red all 20 times.

J It will definitely ***not*** land on Red all 20 times.

3 What is the probability of flipping a penny and getting 3 tails in a row?

A $\frac{1}{2}$ **C** $\frac{1}{6}$

B $\frac{1}{3}$ **D** $\frac{1}{8}$

4 A bag contains 12 tomatoes. Only 3 of the tomatoes are ripe. What is the probability of pulling a ripe tomato from the bag?

F $\frac{1}{3}$ **H** $\frac{1}{9}$

G $\frac{1}{4}$ **J** $\frac{1}{12}$

5 Margo's box has 6 green marbles, 6 red marbles, and 6 blue marbles. If she picks a marble from the box, what is the probability that it will be blue?

A $\frac{1}{18}$ **C** $\frac{1}{3}$

B $\frac{1}{6}$ **D** $\frac{1}{2}$

6 Students voted for their favorite swimming stroke. Six students chose backstroke, nine chose breaststroke, nine chose butterfly, and 12 chose freestyle. If one of these students is chosen at random, what is the probability that he or she chose butterfly?

F $\frac{1}{9}$ **H** $\frac{1}{4}$

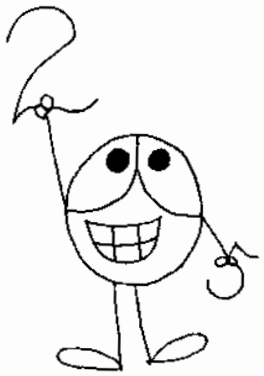
G $\frac{1}{6}$ **J** $\frac{1}{3}$

7 A box has 10 mystery novels, 10 biographies, and 10 science fiction books. Edina reaches in the box and pulls out a mystery novel. Then she reaches in and pulls out another mystery. If she doesn't replace the books, what is the probability that Edina will pull out a mystery again?

A 1 out of 10 **C** 2 out of 7

B 3 out of 10 **D** 10 out of 30

2.6 Greatest Common Factor (GCF) Least Common Multiple (LCM)



GCF/LCM

Terminology	Description	Procedure/Example
Greatest Common Factor (GCF)	the largest factor a given group of numbers has in common	Step 1: List the factors of each number in the given group. Step 2: Search for the greatest common factor. For example: Factors of 30: 1, (2), 3, 5, 6, 10, 15, 30 Factors of 16: 1, (2), 4, 8, 16 Two is the greatest common factor.
Least Common Multiple (LCM)	the smallest positive integer a given group of numbers can each divide into without a remainder	Step 1: List several multiples of each number in the given group. Step 2: Search for the first non-zero multiple they have in common. For example: Multiples of 6: 6, 12, 18, (24), 36, 42, 48 Multiples of 8: 8, 16, (24) Twenty-four is the least common multiple.

❸ GCF - If two numbers do not have GCF greater than 1 the pair is called relatively prime.

Our Turn

Q:

1 What is the greatest common factor (GCF) of 24 and 30?

2 What is the least common multiple (LCM) of 24 and 30?

A:

1 List the factors of 24 and 30

Factors of 24: 1, 2, 3, 4, (6), 8, 12, 24

Factors of 30: 1, 2, 3, 5, (6), 10, 15, 30

The GCF is 6

2 List several multiples of 24 and 30

Multiples of 24: 0, 24, 48, 72, 96, (120), 144

Multiples of 30: 0, 30, 60, 90, (120), 150

The LCM is 120

❸ Remember: The LCM is a positive integer, therefore 0 is not the LCM.

YOUR TURN

Find the GCF of each of the following pairs of numbers.

1 12 and 30

2 18 and 50

3 24 and 40

4 13 and 52

5 100 and 250

Find the LCM of each of the following pairs of numbers.

6 12 and 30

7 9 and 10

8 8 and 24

9 3 and 7

10 4 and 6

11 What is the greatest common factor (GCF) of the numbers 26 and 39?

A 1
B 3
C 13
D 23

12 If the factors of every positive integer were listed respectively, what number would be on every list?

F 0
G 1
H 2
J 10

13 If a list was made of all the factors of 24 and another list of all the multiples of 24, what number would be on both lists?

A 0
B 1
C 3
D 24

14 What is the least common multiple (LCM) of 2, 6, 12, and 24?

F 2
G 18
H 24
J 36

15 If the multiples of all the positive integers were listed respectively, what number is a multiple of every integer?

A 0
B 1
C 10
D 100

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.

1 44% of 46 is what number? _____

2 30% of 70 is what number? _____

3 73% of 79 is what number? _____

4 24% of 100 is what number? _____

5 11% of 18 is what number? _____

6 95% of 49 is what number? _____