

Name _____

Date _____

Refresher Worksheet 1

Multiplication of Whole Numbers

To multiply two whole numbers greater than 10, use the basic multiplication facts in the following way.

Example

Find the product of 1,259 and 63.

- Set up the problem. If one number has more digits, put it on top. Multiply the ones digit of the bottom number by the ones digit of the top number. If the product is more than 10, write the ones digit below the ones digit of the bottom number and “carry” the tens digit by writing it above the tens digit of the top number.
- Now multiply the ones digit of the bottom number by the tens digit of the top number. Add the number you carried, if any. Write the ones digit of the result to the left of the ones digit from the first step. If there is a tens digit, carry it to the next step.
- Repeat the last step with the remaining digits of the top number.
- Now repeat the process with the tens digit of the bottom number. First, write a 0 in the ones digit place, to remind yourself that you are multiplying by tens (60, not 6).
- Multiply the tens digit of the bottom number by each of the digits in the top number, carrying as needed.
- If the bottom number has more digits, repeat the last two steps, writing 00 instead of just 0 to remind yourself that you’re multiplying hundreds. Finally, add the products you’ve found.

$$\begin{array}{r} 1259 \\ \times 63 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 12 \\ 1259 \\ \times 63 \\ \hline 77 \end{array}$$

$$\begin{array}{r} 12 \\ 1259 \\ \times 63 \\ \hline 3777 \end{array}$$

$$\begin{array}{r} 12 \\ 1259 \\ \times 63 \\ \hline 3777 \\ 0 \end{array}$$

$$\begin{array}{r} 35 \\ 112 \\ 1259 \\ \times 63 \\ \hline 3777 \\ 75540 \end{array}$$

$$\begin{array}{r} 35 \\ 112 \\ 1259 \\ \times 63 \\ \hline 3777 \\ +75540 \\ \hline 79317 \end{array}$$

Practice

Find each product.

1. 65×31

2. 529×47

3. $2,782 \times 52$

4. 939×225

5. $1,336 \times 362$

6. $5,325 \times 107$

Name _____

Date _____

Refresher Worksheet 2

Division of Whole Numbers

Long division lets you divide large numbers. The *dividend* is the number to be divided into; the *divisor* is the number you divide by. The *quotient* is the result of the division.

Example

Find the quotient $12,558 \div 73$.

- Set up the problem. Then choose enough of the first digits of the dividend so that the resulting number is greater than the divisor. In this case, 1 and 12 are less than 73, so you should start with 125. $73 \overline{)12558}$
- Decide how many times the dividend will go into the number you've selected. (It must go more than 0 times but less than 10, or you've selected your number incorrectly.) Write the number of times above the *last digit* of the selected number. $73 \overline{)12558}$
1
- Multiply the number you just wrote by the divisor, and write it under the dividend. *Important:* Put the ones digit of the product under the number you wrote in the last step. Writing a 0 under each of the remaining digits of the dividend might help you keep track of which numbers you're using. $73 \overline{)12558}$
7300
- Subtract. $73 \overline{)12558}$
-7300
5258
- Repeat the four steps above. In this case, 5 and 52 are less than 73, so you have to use 525. Ask yourself, how many times will 73 go into 525? Since 7 goes into 52 seven times, try 7: 7×73 is 511, which is less than 525 but close enough that 8×73 would obviously be greater. $73 \overline{)12558}$
-7300
5258
- Continue until you've used all the digits. You can indicate any remainder by writing "R" and the remainder next to the quotient. $73 \overline{)12558}$
-7300
5258
-5110
140
-73
67

Practice

Find each quotient.

1. $930 \div 15$

2. $3,645 \div 45$

3. $15,155 \div 28$

Name _____

Date _____

Refresher Worksheet 3

Adding and Subtracting Decimals

Adding and subtracting decimal numbers is the same as for whole numbers, but you have to be sure the place values are lined up.

Example

Find $83.6 + 20.7$.

- Set up the problem by lining the decimal points up. This puts the place values in the proper places.

$$\begin{array}{r} 83.6 \\ + 20.7 \\ \hline \end{array}$$

- Put a decimal under the decimals of the addends, then add as you would for whole numbers.

$$\begin{array}{r} 83.6 \\ + 20.7 \\ \hline 104.3 \end{array}$$

Find $973.22 - 80.05$.

- Set up the problem by lining the decimal points up. This puts the place values in the proper places.

$$\begin{array}{r} 973.22 \\ - 80.05 \\ \hline \end{array}$$

- Put a decimal under the other decimals, then subtract as you would for whole numbers.

$$\begin{array}{r} 973.22 \\ - 80.05 \\ \hline 893.17 \end{array}$$

Find $53.2 - 14.88$.

- Set up the problem by lining the decimal points up.

$$\begin{array}{r} 53.2 \\ - 14.88 \\ \hline \end{array}$$

- Notice that 53.2 has no number in the hundredths place, but 14.88 has an 8 in the hundredths place. You can write 0 in the hundredths place for 53.2. Then subtract as you would for whole numbers.

$$\begin{array}{r} 53.20 \\ - 14.88 \\ \hline 38.32 \end{array}$$

Practice

Find each sum or difference.

- $32.5 + 82.4$
- $144.97 + 837.66$
- $206.619 + 93.11$
- $71.8 - 20.2$
- $248.23 - 80.89$
- $419.6 - 146.48$

Name _____

Date _____

Refresher Worksheet 4

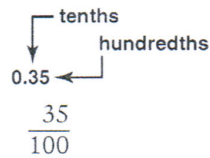
Writing Decimals as Fractions

The key to writing decimals as fractions is to understand *place value*. Each digit in a number tells how many groups are in the number. The first digit to the left of the decimal point tells how many *ones* are in the number. The next digit tells how many *tens*, and the next digit tells how many *hundreds*. The digits to the right of the decimal point tell what part of a whole is in the number. The first digit to the right tells how many *tenths* are in the number. The next digit tells how many *hundredths*.

Example

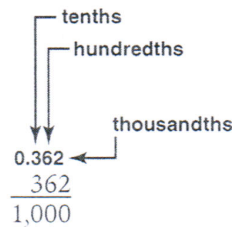
Write 0.35 as a fraction.

- Identify the place value of the last digit.
- Since the 5 is in the hundredths place, the denominator is 100. Write the digits in the numerator, without the decimal point.



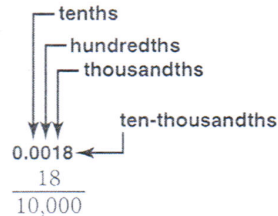
Write 0.362 as a fraction.

- Identify the place value of the last digit.
- Since the 2 is in the thousandths place, the denominator is 1,000. Write the digits in the numerator, without the decimal point.



Write 0.0018 as a fraction.

- Identify the place value of the last digit.
- Since the 8 is in the ten-thousandths place, the denominator is 10,000. Write the digits in the numerator, without the decimal point. Since 0018 is the same as 18, drop the leading zeroes.



Practice

Write each decimal as a fraction.

- | | | |
|----------|-----------|-----------|
| 1. 0.21 | 2. 0.08 | 3. 0.882 |
| 4. 0.092 | 5. 0.5629 | 6. 0.0025 |

Name _____

Date _____

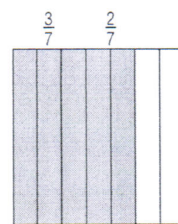
Refresher Worksheet 5**Adding and Subtracting Fractions with the Same Denominator**

In a fraction, the denominator tells how many equal-sized pieces make up a whole. The numerator tells how many of those pieces you have.

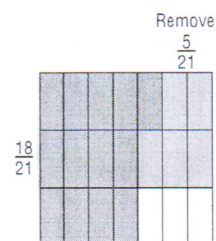
When two fractions have the same denominator, both fractions involve pieces that are the same size. That means you can add them by thinking about the total number of pieces. You can subtract by thinking about how many pieces would be left over if you take some away.

ExampleAdd $\frac{2}{7} + \frac{3}{7}$.

- One fraction involves 2 pieces, each a seventh of a whole. The other fraction is 3 pieces, each a seventh of a whole.
- Together, there are 5 pieces, each a seventh of a whole, so the sum is $\frac{5}{7}$.

Subtract $\frac{18}{21} - \frac{5}{21}$.

- The first fraction involves 18 pieces, all the same size (all the shaded rectangles on the right).
- If you take away 5 of the pieces (the lightly-shaded rectangles), you have 13 left (the dark rectangles). The difference is $\frac{13}{21}$.

**Practice**

Find each sum or difference.

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

2. $\frac{3}{10} + \frac{6}{10}$

3. $\frac{7}{35} + \frac{18}{35}$

4. $\frac{9}{13} - \frac{4}{13}$

5. $\frac{14}{23} - \frac{8}{23}$

6. $\frac{33}{50} - \frac{18}{50}$

Name _____

Date _____

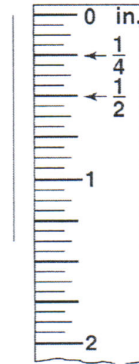
Refresher Worksheet 6**Measuring**

To measure accurately, you need to understand how to read a ruler. You also need to be very careful.

Example

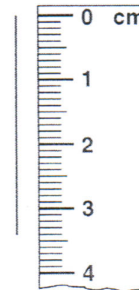
Find the length of this segment, in inches.

- Carefully place a ruler along the segment, with the 0 mark on the ruler right against one end of the segment. Be sure you're using the inches side of the ruler.
- To read the length from the ruler, look at the marks between the inch marks. The inch marks are labeled with whole numbers. The marks between inches have different sizes to help you tell the difference between $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ and even $\frac{1}{16}$ inch.
- In this case, the segment has length $1\frac{3}{8}$ inches.



Find the length of this segment, in centimeters.

- Carefully place the metric side of a ruler along the segment, with the 0 mark on the ruler right against one end.
- There are nine marks between the centimeter marks. Each represents a tenth of a centimeter. (There are only nine because the tenth is the next centimeter mark.) Read the whole number of centimeters and count the smaller marks to be more accurate.
- In this case, the segment has length 3.4 cm.



Find the length of this same segment, in millimeters.

- Each mark between centimeter marks also represents a millimeter. That means each centimeter mark represents 10 millimeters. Count the labeled marks by 10s, then add the number of smaller marks.
- In this case, the segment has length 34 mm.

Practice

Find the length of each segment, using the given unit.

1. Unit: centimeters
2. Unit: inches
3. Unit: millimeters

Name _____

Date _____

Refresher Worksheet 7

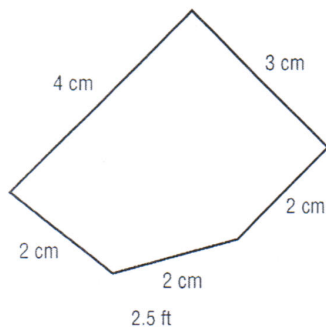
Finding Perimeter

The *perimeter* of a figure is the distance around it. To find the perimeter of a figure whose sides are all straight lines, add the lengths of all the sides.

Example

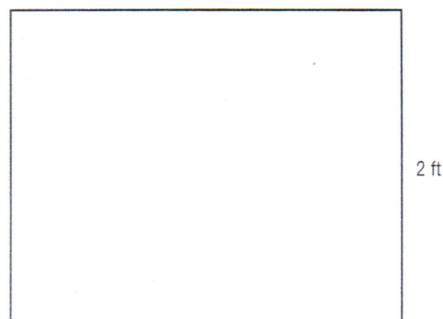
Find the perimeter of the figure.

- The sides are labeled with their lengths.
- The perimeter is $4 + 3 + 2 + 2 + 2$, or 13 cm.



Find the perimeter of the rectangle.

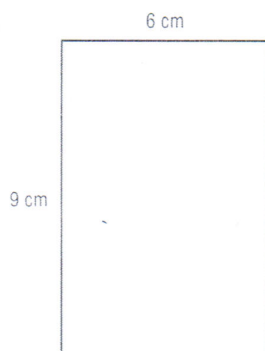
- Two sides are labeled with their lengths. Because this is a rectangle, the side opposite each labeled side has the same length.
- The perimeter is $2.5 + 2 + 2.5 + 2$, or 9 ft.



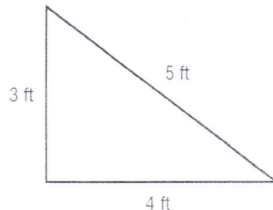
Practice

Find the perimeter of each figure.

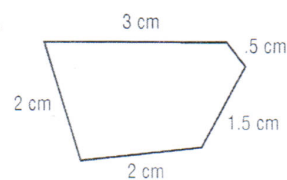
1.



2.



3.



Name _____

Date _____

Refresher Worksheet 8

Finding Area of a Rectangle

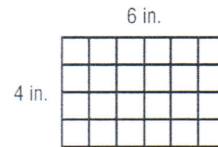
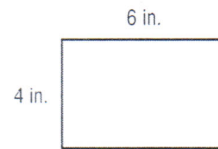
The *area* of a figure is a measure of how much space it takes up. Areas are measured in *square units*, such as square inches or square centimeters.

Example

Find the area of the rectangle.

Solution 1

- Each side of this rectangle has been divided into sections one inch wide. The small squares inside the rectangle are 1 inch by 1 inch, so they each have an area of *1 square inch*.
- There are 24 squares inside the rectangle, each 1 square inch in area. That means the rectangle has an area of 24 square inches.

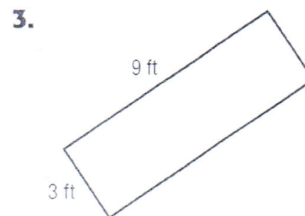
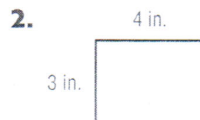
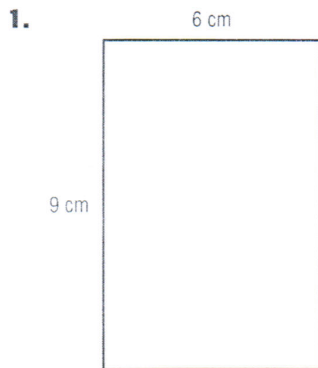


Solution 2

- The sides of the rectangles are 6 inches and 4 inches. The area of the rectangle can be found by multiplying the numbers: $6 \times 4 = 24$.
- Since the length and width are measured in inches, the area's unit is square inches. The rectangle has an area of 24 square inches.

Practice

Find the area of each rectangle.



Name _____

Date _____

Refresher Worksheet 9

Bar Graphs and Pictographs

Bar graphs and pictographs are both a good way to show information. A bar graph uses two *axes*, a vertical (up and down) line and a horizontal (left and right) line. The information is displayed using bars of different heights. The height of a bar depends on the information. A pictograph, on the other hand, uses only one axis, like a number line. The axis can be vertical or horizontal. A picture or *icon* represents a certain number, and the information is displayed by using an appropriate number of icons for each item or category.

Example

Here are the number of gold medals won by the top ten countries in the 2000 Olympic Summer Games.

Country	Gold Medals
Australia	16
People's Republic of China	28
Cuba	11
France	13
Great Britain	11

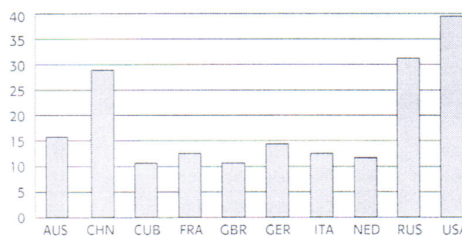
Country	Gold Medals
Germany	14
Italy	13
Netherlands	12
Russian Federation	32
United States of America	39

Create a bar graph showing these data.

- The number of medals won will be shown by the height of the bars. That means the vertical axis will show the numerical data.
- Each bar will represent a different country. Use an abbreviation for each country's name to label the bars.
- Use graph paper, or a simple scale (like 1 mm = 1 gold medal) to figure out the necessary lengths of the bars. For example, Australia's 16 medals might give them a bar 16 mm high.

Gold Medals Won in 2000 Olympics

- To get information from a bar graph, compare the height of the bar to the labels on the axis. For example, France's bar is a little higher than halfway between 10 and 15. That means France won about 13 medals. (In fact, they won exactly 13 medals.)



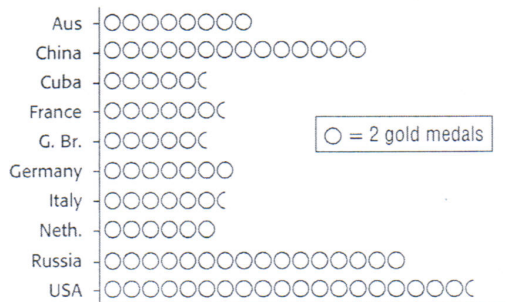
Name _____

Date _____

Refresher Worksheet 9**Bar Graphs and Pictographs, continued**

Create a pictograph showing the gold medal information from the table.

- Choose an icon and how many each will represent. For a gold medal, you might use a circle. The numbers go from 11 to 39. Drawing 39 circles would take a lot of time and space, so you might say each circle represents 2 medals. You can use a half-circle for countries that won an odd number of medals. Include a key that tells how many each icon represents.
- Write the countries (or abbreviated names) along a horizontal or vertical axis. Since there are 10 countries and almost 20 circles, a vertical axis will probably work better.
- Draw the appropriate number of circles for each country.

Gold Medals Won in 2000 Olympics

- To get information from a pictograph, count the number of icons and use the key. You may need to estimate partial icons. For example, Italy has 6 full circles and one half-circle. Each full circle represents 2 medals, so Italy won 13 medals.

Practice

Use the table to create both a bar graph and a pictograph showing the given information.

Country	Medals
Australia (AUS)	58
People's Republic of China (CHN)	59
Cuba (CUB)	29
France (FRA)	38
Great Britain (GBR)	28

Country	Medals
Germany (GER)	57
Italy (ITA)	34
Netherlands (NED)	25
Russian Federation (RUS)	88
United States of America (USA)	97

Name _____

Date _____

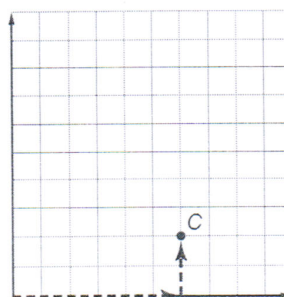
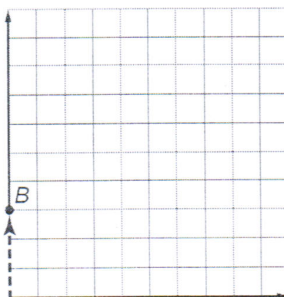
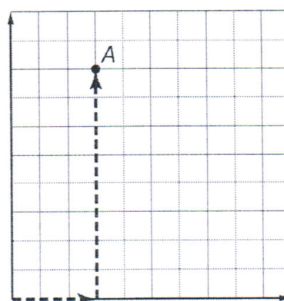
Refresher Worksheet 10**Plotting Points**

Plotting points on a grid is a tool that will help you greatly in your future mathematics study.

Example

Plot these points on a grid: $A(3, 8)$; $B(0, 3)$; $C(6, 2)$

- Use a ready-made grid, or draw horizontal and vertical axes on graph paper.
- For each point, the first number in the pair tells how far to the *right* the point should be. For Point A, the first number is 3. Start at the origin—where the axes meet—and count 3 units to the right.
- The second number tells how far *up* the point should be. For Point A, the number is 8. From the place 3 to the right of the origin, move 8 units up. Draw the point and label it.
- For Point B, the first number is 0 and the second is 3. Move 0 units to the right (so you stay on the vertical axis). Then move 3 units up.
- For Point C, the first number is 6 and the second is 2. Move 6 units to the right and 2 units up.

**Practice**

Plot each point, and label it with the appropriate letter.

- | | | |
|--------------|--------------|--------------|
| 1. $A(3, 5)$ | 2. $B(6, 8)$ | 3. $C(1, 3)$ |
| 4. $D(8, 0)$ | 5. $E(2, 9)$ | 6. $F(0, 7)$ |

Name _____

Date _____

Refresher Worksheet 11

Working with Tables

When working with patterns in numbers, it's sometimes helpful to work with tables. When you have a *rule* that tells how to get one number from the other, you can use that rule to complete a table.

Example

Use the rule for the second column to complete the table.

Input	Subtract 15
20	
21	
25	
30	
50	

Input	Multiply by 4
1	
2	
3	
10	
20	

- The rule for the first table is "subtract 15." That means you should take the number in each row of the first column (the *input*) and add 15 to it. The result goes in the *same* row of the second column.

Input	Subtract 15
20	5
21	6
25	10
30	15
50	35

- The rule for the second table is "multiply by 4." Multiply each number in the first column by 4 and write the result as the appropriate entry in the second column.

Input	Multiply by 4
1	4
2	8
3	12
10	40
20	80

Practice

Use the rule for the second column to complete the table.

1.

Input	Subtract 2
2	
3	
4	
5	

2.

Input	Add 20
1	
4	
10	
20	

3.

Input	Divide by 2
4	
8	
12	
20	