

MATH

ADVANTAGE

E-LAB

RECORDING SHEETS

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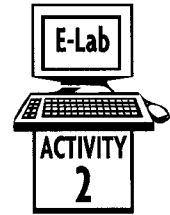
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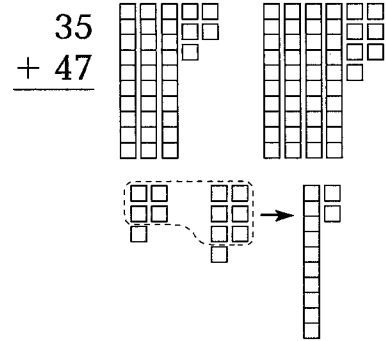
Modeling Addition of Two-Digit Numbers



To add two-digit numbers, add the ones first, and then add the tens. When there are more than 9 ones, regroup 10 ones as 1 ten.

Add 35 and 47.

- 35 has ___ tens and ___ ones.
47 has ___ tens and ___ ones.
- Add the ones to get ___ ones.
Regroup the ones as 1 ten and ___ ones.
Add the tens to get ___ tens.
- Write the sum. ___



Start E-Lab and select Activity 2.

- Enter 35 and 47. If you need to regroup the ones, click **Regroup**. If not, click **Check**.
- Record the addition number sentence. ___ + ___ = ___
- Enter 73 and 54. You may need to click **Regroup** to regroup the tens.
- Record the addition number sentence. ___ + ___ = ___

This time make up your own two-digit numbers. If you need to regroup the ones or tens, click **Regroup**. If not, click **Check**. Record the addition sentence.

- ___ + ___ = ___
- ___ + ___ = ___
- ___ + ___ = ___
- ___ + ___ = ___

Do these additions yourself.

12.
$$\begin{array}{r} 48 \\ +83 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 92 \\ +19 \\ \hline \end{array}$$

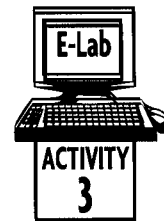
14.
$$\begin{array}{r} 77 \\ +22 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 56 \\ +44 \\ \hline \end{array}$$

- Check your answers on the computer.

If you have 10 or more ones, regroup them as tens and ones.

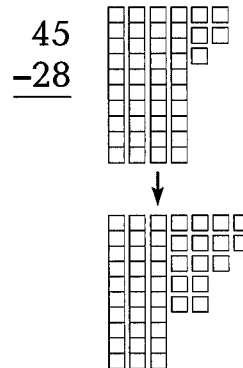
Modeling Subtraction of Two-Digit Numbers



To subtract two-digit numbers, subtract the ones first and then the tens. If you need to, regroup 1 ten as 10 ones.

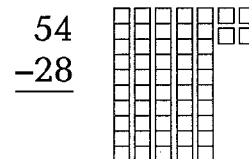
Subtract 28 from 45.

1. 45 has ____ tens and ____ ones.
28 has ____ tens and ____ ones.
2. Regroup 45 as 3 tens and ____ ones.
Subtract the ones to get ____ ones.
Subtract the tens to get ____ ten.
3. Write the difference. ____



Start E-Lab and select Activity 3.

4. Click **New Problem**. Enter 66 and 27. If you need to regroup 1 ten, click **Regroup**. If not, click **Subtract**.
5. Record the subtraction sentence. ____ - ____ = ____
6. Enter 54 and 28. Click **Regroup** to show the regrouping of the number 54 that is needed.
7. Record the subtraction sentence. ____ - ____ = ____



Use the computer to subtract. Click **Regroup** if you need to. Record the differences.

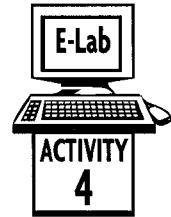
8. $58 - 24 = \underline{\quad}$ 9. $42 - 28 = \underline{\quad}$ 10. $85 - 58 = \underline{\quad}$

Make up your own two-digit numbers to subtract. If you need to regroup 1 ten, click **Regroup**. If not, click **Subtract**. Record the subtraction sentence.

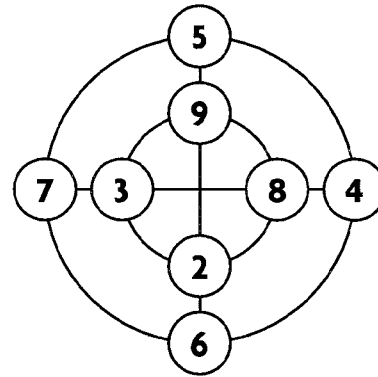
11. ____ - ____ = ____ 12. ____ - ____ = ____
13. ____ - ____ = ____ 14. ____ - ____ = ____

If you need more ones when subtracting, regroup 1 ten as 10 ones.

Subtracting Across Zeros



In a magic circle, the four numbers on a circle and the four numbers in a straight line add up to the same sum.



1. Find the sum for this magic circle by adding the numbers across.

$$7 + 3 + 8 + 4 = \underline{\quad}$$

2. Now add the numbers around the outer circle. Is the sum the same?

$$7 + 5 + 4 + 6 = \underline{\quad}$$

Start E-Lab and select Activity 4.

3. Click **New Problem**. Copy the magic circle that appears on the screen.

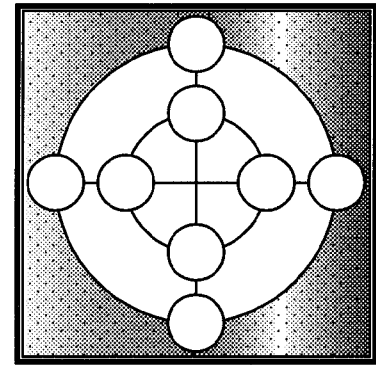
4. Complete the magic circle. You can find the solution on your own or follow these instructions. First find the sum of the four numbers across or down. Write your magic sum on the line. _____

5. Next, add the three numbers around the circle with the missing number. _____

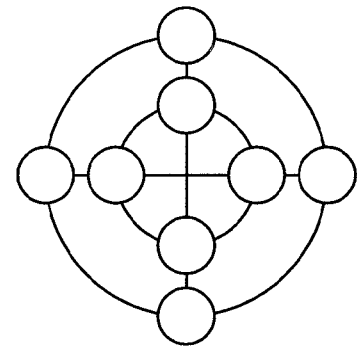
6. Subtract your answer in number 5 from the magic sum to find the missing number.
_____ - _____ = _____

7. Enter this number into the magic circle.

8. Add 5 to each number in the magic circle. Write the new numbers in this magic circle. Do they make a new magic circle? Check by adding the four numbers across. Write the sum. _____



Magic Sum _____



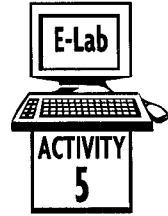
Magic Sum _____

Now add the four numbers around the outside circle. Write the sum. _____
Are the sums the same? _____

You can make a new magic circle by adding or subtracting the same number to all the numbers in the circle.

Name _____

Time to the Minute



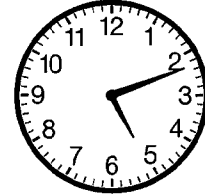
The two hands of a clock tell the time in hours and minutes.

Use the shorter hand to read the **hours**.



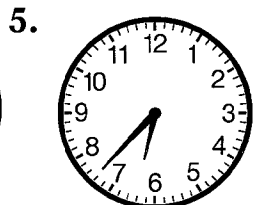
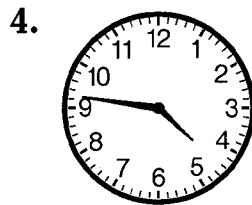
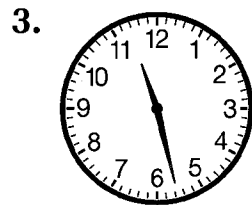
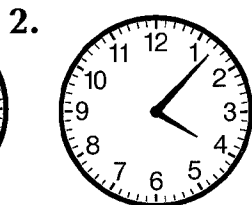
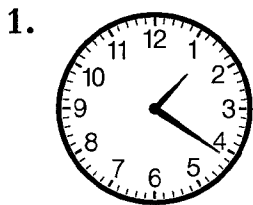
See the number 5.

Use the longer hand to read the **minutes**.
Count the minute marks, **12**.



Write the time. **5:12**

Write each time.



Start E-Lab and select Activity 5.

6. Click **Clock**, and watch the hands move.

How many hours pass in one complete turn of the hour hand? _____

How many minutes pass in one complete turn of the minute hand? _____

Click **Clock** again, and check your answers.

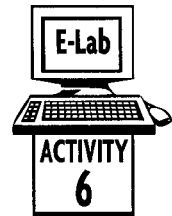
- When you click **New Time**, the hour and minute hands will move. Write the hours, the minutes, and the time.
- Then click **Check Time** to check your answer. Make a ✓ if it is correct.
- Do this four times.

	Hours	Minutes	Time	Check
7.				
8.				
9.				
10.				

While the minute hand moves around the clock for 60 minutes, the hour hand moves from one hour to the next.

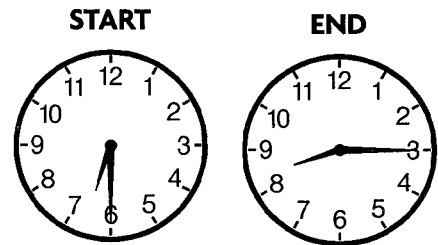
Name _____

Elapsed Time: Minutes and Hours



Elapsed time is the time that passes from the start to the end of an activity.

1. Read the time at the start. _____
Read the time at the end. _____
2. How many hours have passed? _____
How many extra minutes? _____
3. What is the elapsed time? _____



Start E-Lab and select Activity 6.

Click **New Times**. Watch the time pass from start to end.

4. Write the starting and ending times. _____
Count the minutes and hours to find the elapsed time. _____
Check against the elapsed time shown. _____

Do this two more times.

5. start _____ end _____ elapsed time _____
6. start _____ end _____ elapsed time _____

Click **New Times**. Record the starting time and the ending time.

Write the hours that have passed.

Then count by fives to find the extra minutes that have passed.

Write these down. Then click **Check** to check your answer.

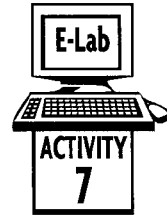
Change your answer if you need to.

Do this four times.

	Starting Time	Ending Time	Hours Passed	Extra Minutes	Elapsed Time
7.					
8.					
9.					
10.					
11.					

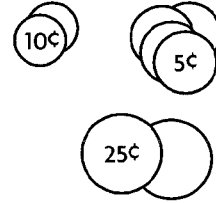
Elapsed time is the time that passes from the start to the end of an activity.

Making Equivalent Sets



Equivalent sets name the same amount.

Sets of coins can be equivalent sets. Since 2 dimes equal 20¢ and 4 nickels equal 20¢, they name the same amount.



1. What is the value of 2 quarters? _____

2. What is the value of 5 dimes? _____

Do the 2 quarters and 5 dimes form an equivalent set?

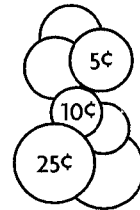
Start E-Lab and select Activity 7.

Click **Count Money**. Record the numbers of quarters, dimes, nickels, and pennies. Find the total amount.

	Quarters	Dimes	Nickels	Pennies	Total
3.					
4.					
5.					

Click **Match Amounts**. Begin at the left. Record the numbers of coins and the total. Then make an equivalent set on the right.

	25¢	10¢	5¢	1¢	Total	25¢	10¢	5¢	1¢
6.									
7.									
8.									



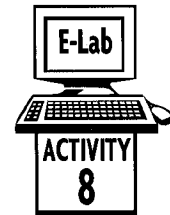
Click **Match Amounts**. Then make an equivalent set using the fewest coins. Do this two times.

	25¢	10¢	5¢	1¢	Total	25¢	10¢	5¢	1¢
9.									
10.									

Two sets of coins that have the same value are equivalent sets.

Name _____

Number Patterns



A hundred chart has 10 rows of 10 squares each. Think about one that is numbered from 1 to 100 using the pattern started here.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18		

You can skip count on a hundred chart to make patterns.

1. Skip count by threes for 10 skips. Write the number for each square you use. _____
2. Keep skip counting by threes. Write the numbers you use in the last row of the chart. _____

Start E-Lab and select Activity 8.

Each time you click **Number**, a square in the hundred chart lights up. Write the number for that square. Then type it in, and press enter. Follow directions to change your answer if you need to.

3. _____ 4. _____ 5. _____ 6. _____

Use the chart shown.

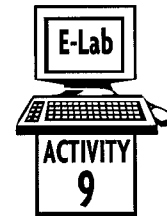
7. If you skip count by fours for 8 skips, this is what you will see. At what number will you be? _____
8. Finish the pattern by filling in the rest of the chart.

Click **Skip Count**. Watch the skip counting on the screen. Then fill in the blanks.

9. Skip counting by _____.
10. Skip counting by _____ for _____ skips.
11. Skip counting by _____ for _____ skips. The last number is _____.
12. The first and last numbers are _____.
13. Click **Skip Count** again. Describe the pattern you see.

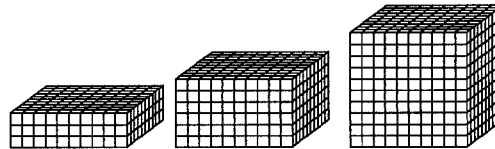
Skip counting makes patterns on a hundred chart.

Understanding 1,000's



Hundreds blocks can be stacked.

1. How many hundreds blocks are needed to show 300? _____
2. What number does a stack of 6 hundreds blocks show? _____
3. How many hundreds blocks are needed to show 1,000? _____



Start E-Lab and select Activity 9.

4. To see how the model of this program works, first build one hundred. To do this, enter 90 as your first number. Enter 10 as your second number. Click **Regroup**. Watch the bottom line on your screen. Describe what happens.

5. What is the shape and color of a 10's block? _____
What is the shape and color of a 100's block? _____

Enter the numbers. Click **Regroup**. Sometimes you will need to click **Regroup** two times. Put a check mark beside each group of numbers that adds up to exactly 100.

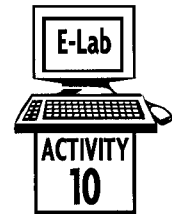
6. 50 and 70 _____
7. 80 and 20 _____
8. 75 and 25 _____
9. 65 and 25 _____
10. Now use the model to build 1,000. First, enter 900 and 100. Next, click **Regroup**. Describe what happens.

What does the model for 1,000 look like? _____
How many 100's did it take to make 1,000? _____

Enter the numbers. Click **Regroup**. Sometimes you may need to click **Regroup** two or three times. Follow the directions on the computer. Put a check mark beside each group of numbers that adds up to exactly 1,000.

11. 800 and 200 _____
12. 700 and 300 _____
13. 535 and 365 _____
14. 645 and 355 _____

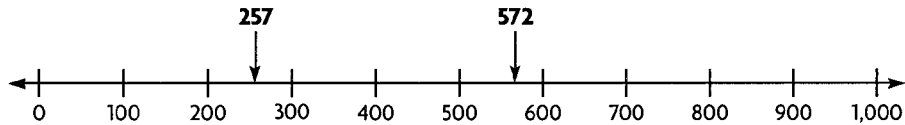
10 tens equal 100. 10 hundreds equal 1,000.



Comparing Numbers

The number line can be used to find numbers.
It can also be used to compare numbers.

Compare 257 and 572.



1. Between which hundreds is 257? _____ and _____
2. Between which hundreds is 572? _____ and _____
3. 572 is to the right of 257. _____ is greater than _____.

Start E-Lab and select Activity 10.

Click **2 Digits**.

Record both numbers that appear.
Compare the numbers on the
number line. Record.

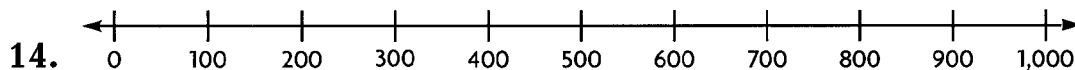
4. ____ and ____; ____ > ____
5. ____ and ____; ____ > ____
6. ____ and ____; ____ > ____
7. ____ and ____; ____ > ____
8. ____ and ____; ____ > ____

Click **3 Digits**.

Record both numbers that appear.
Compare the numbers on the
number line. Record.

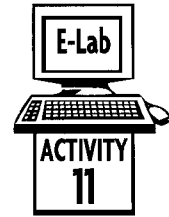
9. ____ and ____; ____ > ____
10. ____ and ____; ____ > ____
11. ____ and ____; ____ > ____
12. ____ and ____; ____ > ____
13. ____ and ____; ____ > ____

Click **Zoom In**. Record the number and its location on the number line.
Circle the nearest hundred on the number line. Then click your answer
on the computer screen to check.



**When you compare three-digit numbers, compare the
hundreds. If they are alike, compare the tens. If they are
alike, compare the ones.**

Making Equal Groups






If groups are equal, you can count groups to find the total number of things.



In the model you can see 4 equal groups. Each group has 3 squares. There are 12 squares in all.

So, 4 groups of 3 is 12.

Count to complete each sentence.

1. 5 groups of 2 is ____ . 
2. 3 groups of ____ is ____ . 
3. ____ groups of ____ is ____ . 

Start E-Lab and select Activity 11.

Click **New Problem**.

4. How many are in each group? ____

How many groups are there? ____

Guess the total. ____

Count the total. ____

5. Click **New Problem** again. Study the model.

Complete the sentence. ____ groups of ____ is ____ .

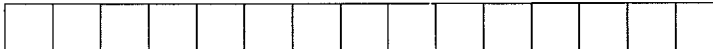
Check your answer.

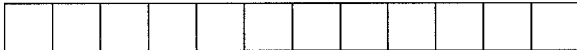
Do this four times.

6. ____ groups of ____ is ____ . 7. ____ groups of ____ is ____ .

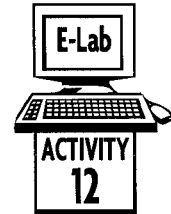
8. ____ groups of ____ is ____ . 9. ____ groups of ____ is ____ .

Complete the model to show the groups.

10. 3 groups of 5 is 15. 

11. 6 groups of 2 is 12. 

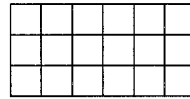
You can count equal groups to find the total.



Modeling Multiplication

Equal groups can be used to show products. They model the same product even if they are shown in different ways.

Here are 3 groups of 6 in an array.

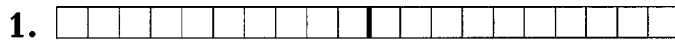


Here are the same 3 groups of 6 side by side, in a line. Both models show the same product, 18.

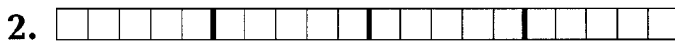
$$\begin{array}{ccccccc}
 3 & \times & 6 & = & 18 & & \\
 \text{number of} & & \text{number in} & & \text{product} & & \\
 \text{groups} & & \text{each group} & & & &
 \end{array}$$



Write the product for the models shown below.



_____ × _____ = _____



_____ × _____ = _____

Start E-Lab and select Activity 12.

Click **New Problem**. The first number is the number of groups. The second number is how many there are in each group.

3. How many groups are there? _____
4. How many are in each group? _____
5. What is the product? _____

Enter the product and watch what happens.

Click **New Problem**. Write what you think the product is and enter that number into the computer. Do this two times.

6. _____ 7. _____

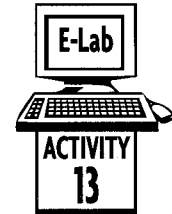
Do this six more times. Copy the problem and the product. Circle those you get right on the first try.

8. _____ 9. _____ 10. _____
11. _____ 12. _____ 13. _____

14. Did you get all six problems correct on the first try? If not, keep doing six until you get each one correct on the first try.

The number of groups times the number in each group equals the product, or total number.

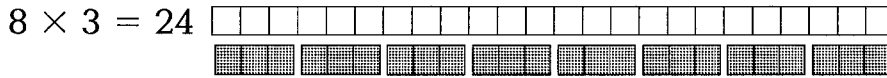
Exploring Division



Multiplication combines equal groups into one group.
 Division separates one group into equal groups.
 One operation undoes what the other one does.

Combine 8 groups of 3.

Separate 24 into groups of 3.



$24 \div 3 = 8$

- How many squares are there in all? _____
 How many squares are in each group? _____
 How many equal groups are there? _____
- Write the division sentence. _____ \div _____ = _____

Start E-Lab and select Activity 13.

Click **New Problem**. Study the diagram that comes up.

- How many squares are there in all? _____ in one group? _____
- Enter into the computer the number of groups you think are needed.
 Change your answer if it is too large or too small.
 Watch as the groups are added.
- Copy the division sentence for this display. _____ \div _____ = _____

Click **New Problem**. Record the numbers in the table below.
 Do this until you have filled in the table.

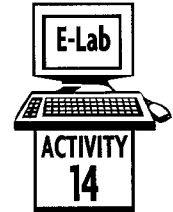
	Total	Number in each group	Number of groups
6.			
7.			
8.			
9.			
10.			

Click **New Problem** two more times. Estimate the answer.
 Enter it into the computer and change your answer if you need to.
 Copy the division sentences.

11. _____ \div _____ = _____ 12. _____ \div _____ = _____

A division sentence tells how to separate one large group into equal smaller groups.

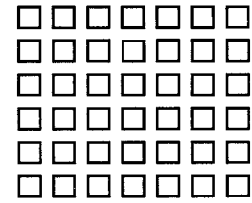
Modeling Division Using Arrays



Arrays can be used to model multiplication and division.

MULTIPLICATION — 6 rows of 7 squares each

$$6 \times 7 = 42$$



DIVISION — 42 squares separated into rows of 7 squares

$$42 \div 7 = 6$$

1. On another piece of paper, draw an array that shows 30 squares separated into rows of 5 squares each.
2. Write the multiplication sentence. _____ \times _____ = _____
3. Write the division sentence. _____ \div _____ = _____

Start E-Lab and select Activity 14.

Click **New Problem**. Type 63 in the dividend box. Type 7 in the divisor box.

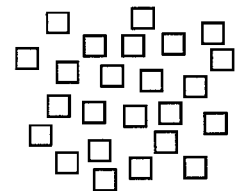
4. How many squares are there in all? _____
 How many are in each row? _____
 How many rows are there? _____
 The number of rows is the quotient.
 Click **Divide** to check your answer.

Fill in the table below as you complete each problem.

	Dividend	Divisor (number in each row)	Quotient (number of rows)
5.	$24 \div 3$		
6.	$35 \div 7$		
7.	$54 \div 6$		
8.	$36 \div 4$		

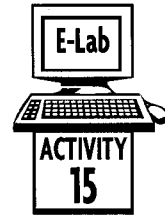
There are 24 squares shown. Give the number of rows.

9. 4 in each row _____
10. 6 in each row _____
11. 3 in each row _____
12. 2 in each row _____

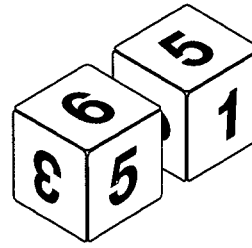


Arrays can be used to model division and multiplication.

Collecting and Organizing Data



Most of the time it is not enough to collect data. You need a way to organize your data so that you can answer questions about it. You can use a *tally table* to record how often something happens.



Start E-Lab and select Activity 15.

- Roll the computer number cubes ten times. Record the numbers and their sum for each roll in the table below.

ROLL	1	2	3	4	5	6	7	8	9	10
Left Number Cube										
Right Number Cube										
Sum										

- Organize your data from Problem 1 by the size of the sum for each roll. Make a tally mark for each sum in the table.
- Organize your data from Problem 1 by whether the number on both cubes is the same or different. Make a tally mark for each roll.
- Organize your data from Problem 1 by which cube, if either, shows the larger number. Make a tally mark for each roll.
- Roll the computer number cubes ten more times and record in the table below.

The sum is less than 7.	
The sum is greater than or equal to 7.	

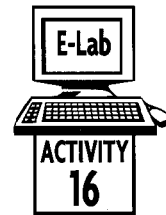
The number on both cubes is the same.	
The number on each cube is different.	

Left cube shows the larger number.	
Right cube shows the larger number.	
Both cubes show the same number.	

ROLL	1	2	3	4	5	6	7	8	9	10
Left Number Cube										
Right Number Cube										
Sum										

- Compare the tables in Problems 1 and 5. Are they the same? _____
Explain how to use tally tables to compare data. _____

A tally table shows how often something happens.



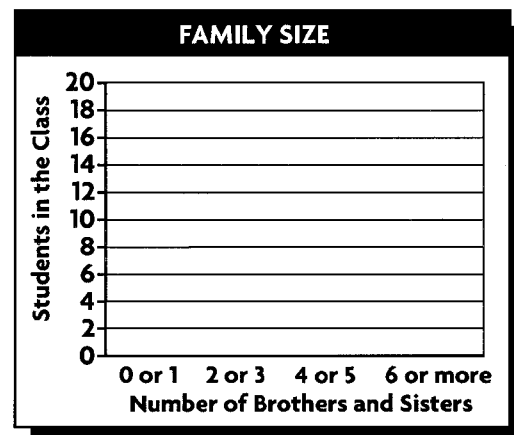
Making Bar Graphs

You can use a table to show information you have collected. Sometimes, however, a picture will show it better. A bar graph is one way to make a picture of information.

Start E-Lab and select Activity 16.

1. Follow the directions on the screen, and enter the data in the "Students in Our Class" column.

FAMILY SIZE	
NUMBER OF BROTHERS AND SISTERS	STUDENTS IN OUR CLASS
0 or 1	9
2 or 3	12
4 or 5	6
6 or more	3



The vertical line on the left side of the graph has a **scale** of numbers that helps you read the number each bar shows.

2. Shade the bars on your graph from the graph on the computer.
3. Will a bar showing 6 be longer or shorter than a bar showing 12?

4. Use the back of this page to draw what you think a bar graph will look like if
 - a. all numbers in the data are equal.
For example,

5	5	5	5	5
---	---	---	---	---

.
 - b. the numbers in the data keep getting larger by 1.
For example,

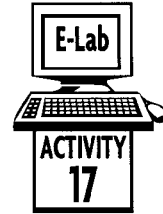
5	6	7	8	9
---	---	---	---	---

.

Use **E-Lab** to check your answers.

A bar graph shows information about data as a picture.

Recording Results of an Experiment



Start E-Lab and select Activity 17.

Click **Spinner**. Follow the directions on the computer screen and set the number of sections in the spinner at 3.

- Click **Go** to spin. Spin the 3-section spinner 12 times. Mark tallies for the outcomes in the table.

SECTION	1	2	3
TALLIES			

Click **Start Over**. Now set the number of sections in the spinner at 9.

- Make a guess. If you spin the 9-section spinner 12 times, will it stop more or fewer times on the number 2 than in Problem 1? Why?

- Spin the 9-section spinner 12 times. Mark tallies for the outcomes in the table.

SECTION	1	2	3	4	5	6	7	8	9
TALLIES									

- Compare the outcomes in Problem 3 with your guess in Problem 2. Suppose you spin the 9-section spinner 12 more times. What would you now guess for the number of times it would stop on the number 2: more, fewer, or about the same number of times as in Problem 1?

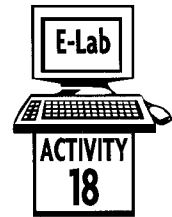
- When a spinner has many sections, do you think it will stop on a given number many times or only a few times? Explain.

- When a spinner has only a few sections, do you think it will stop on a given number many times or only a few times? Explain.

Use the computer to test your answers to Problems 4, 5, and 6.

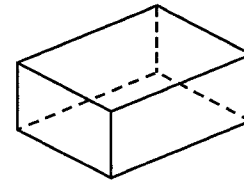
When there are more possible outcomes, the chances that any one outcome will happen become less.

Tracing and Naming Faces

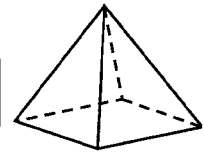


Rectangular prisms are solid figures with rectangles as faces. Other solid figures have faces that are triangles, squares, or circles.

1. How many faces does the rectangular prism have? _____
 What are their shapes? _____



PRISM



PYRAMID

2. How many faces does the square pyramid have? _____
 What are their shapes? _____

Start E-Lab and select Activity 18.

Click **Name Solid**. When a solid figure appears on the screen, write *prism* or *pyramid* to identify it. Write *triangle*, *square*, or *rectangle* to identify the shaded face. Enter your choices as a check.

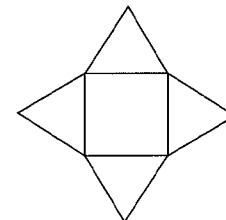
3. _____ 4. _____ 5. _____

Click **Count Faces**. Count the number of faces. Enter your answer into the computer and change it if you need to.

6. _____ 7. _____ 8. _____

Can you see how to refold this pattern to form a solid figure?

9. Will it be a *prism* or a *pyramid*? _____
 10. How many faces will it have? _____
 How many corners? _____



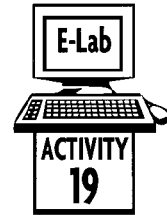
Click **Name Pattern**. Study the pattern.

Choose between *prism* and *pyramid*. Then count the faces and the corners it will have when folded.

11. _____ 12. _____ 13. _____
 faces _____ corners _____ faces _____ corners _____ faces _____ corners _____

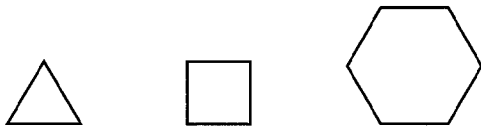
If you cut and flatten a rectangular prism, you get rectangles. If you cut and flatten a square pyramid, some of the shapes will be triangles.

Using Congruent Figures



All of the figures in a set of pattern blocks have some sides that are the same size.

This activity uses the triangle, the square, and the hexagon.



1. How many sides does the triangle have?
How many corners does it have? _____
2. How many sides and corners does the square have?
the hexagon? _____

Start E-Lab and select Activity 19.

Use any or all of these three kinds of plane figures to build around a point.

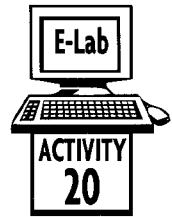
3. Click the triangle. Continue to click until triangles are all around the point. Watch how the triangles are added. How many are needed to go all the way around the point? _____
Are all the triangles congruent? _____ Explain. _____
4. Repeat, this time clicking the square. How many squares are needed to go all the way around the point? _____
Are all the squares congruent? _____
5. Repeat, this time clicking the hexagon. How many hexagons are needed to go all the way around the point? _____
Are all the hexagons congruent? _____

Different plane figures can be used around the same point. Click the numbers below in the order in which they are listed. Do the figures that appear on the screen fit exactly around the point? Answer *yes* or *no*.

6. 3-3-3-4-4 _____
7. 4-4-6-4 _____
8. 4-6-3-4 _____
9. Now try some patterns on your own!

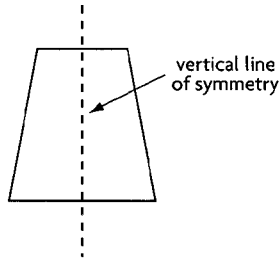
Six congruent triangles fit exactly around a point, as do 4 congruent squares, or 3 congruent hexagons.

Symmetry

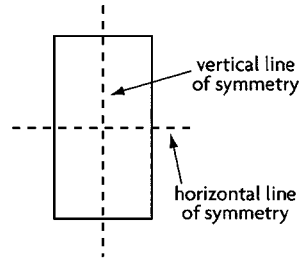


A *line of symmetry* divides a figure into two halves that are congruent.

This figure has 1 line of symmetry.

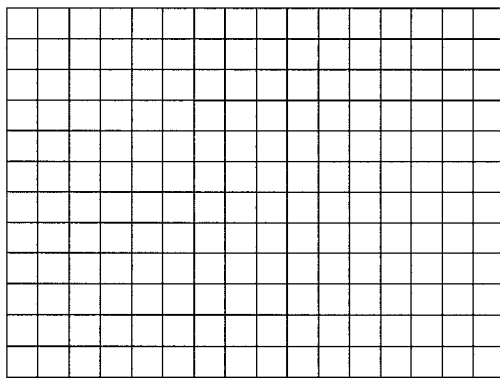


This figure has 2 lines of symmetry.

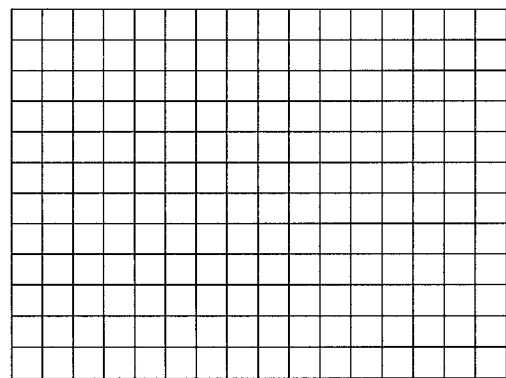


Start E-Lab and select Activity 20.

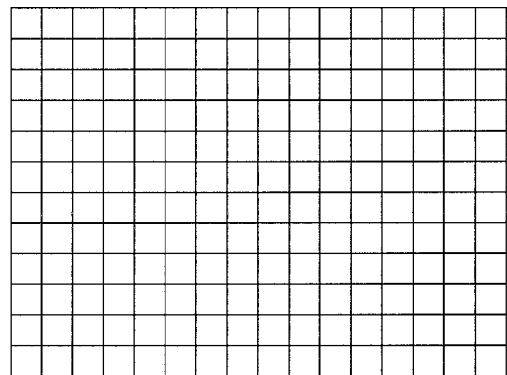
1. Click **Vertical**. Click **New Figure**. Place the line of symmetry where it belongs. Then draw the figure in the box below.



2. Click **Horizontal**. Click **New Figure**. Place the line of symmetry where it belongs. Then draw the figure in the box below.

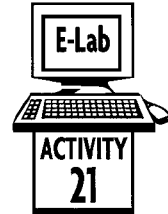


3. Click **Any**. Click **New Figure**. Find and copy a figure that has both vertical and horizontal lines of symmetry. You may have to click **New Figure** several times.



4. Is the left half of the figure congruent with the right half? _____ Is the top half congruent with the bottom half? _____

A line of symmetry divides a figure into congruent halves.

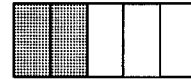


Equivalent Fractions

When different fractions name the same part of a whole, they are called *equivalent fractions*.

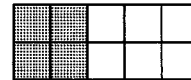
Start with a rectangle. Divide it into 5 equal parts. Shade 2 parts.

The fraction you have shaded is $\frac{2}{5}$.



Now, divide the rectangle into 10 equal parts. Shade 4 parts.

The fraction you have shaded is $\frac{4}{10}$.

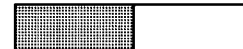


Both show the same amount.

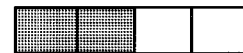
So the fractions are equivalent. $\frac{2}{5} = \frac{4}{10}$

The three rectangles on the right are the same size.

1. What fraction of each is shaded? _____



2. Do the fractions name the same amount? _____



3. Are the three fractions equivalent? _____



Start E-Lab and select Activity 21.

Click **Fraction**. Count the equal parts in the whole rectangle. Count the number of shaded parts. Write the fraction for the part that is shaded. Enter your answer into the computer to check. Do this four times.

4. _____

5. _____

6. _____

7. _____

Click **Equivalent Fractions**. A fraction will appear. Follow the directions on the screen to build an equivalent fraction. Write the two equivalent fractions. Do this four times.

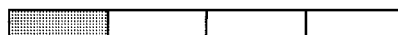
8. _____ = _____

9. _____ = _____

10. _____ = _____

11. _____ = _____

In the first blank, write the fraction shown by the shaded part of the whole. Then in the second blank, write the equivalent fraction asked for.

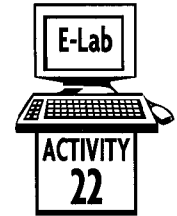


12. _____ in sixths _____

13. _____ in eighths _____

14. _____ in fifths _____

Equivalent fractions name the same part of a whole.

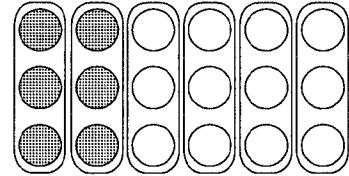


Part of a Group

A whole group can be separated into equal parts.
A *fraction* can be used to name the equal parts.

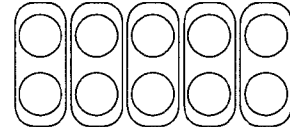
1. This model shows $\frac{2}{6}$ of 18.

How many are in the whole group? _____
How many are in each of the 6 equal parts? _____



2. This model shows 10 in 5 equal parts of 2 each.

Shade $\frac{3}{5}$ of the whole group.



Start E-Lab and select Activity 22.

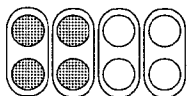
Click **New Problem**. Study the model.

3. How many are in the whole group? _____
How many are in each of the equal parts? _____
4. Follow the directions on the computer to color the columns. Build the needed fractional part. Click **Check** to check your answer.

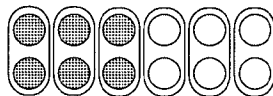
Each time you click **New Problem**, a new model and problem appear. Follow the directions on the computer to shade the equal parts. Build the needed fractional part. Click **Check** to check your answer.

	NUMBER IN WHOLE GROUP	NUMBER IN EACH PART	FRACTIONAL PART NEEDED	CORRECT ON FIRST TRY?
5.				
6.				
7.				
8.				
9.				

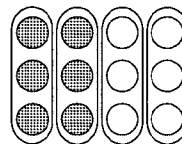
Quit the program. Write the fraction that names the shaded part.



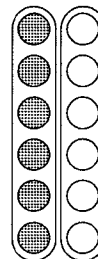
10. _____



11. _____



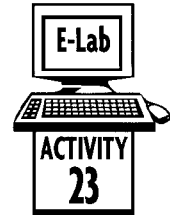
12. _____



13. _____

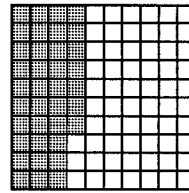
Parts of a whole can be written as fractions.

Hundredths



Hundredths are decimal numbers. They can be shown on a decimal square. Count to find the decimal that names the shaded part.

Example 1



37 hundredths
0.37

Start E-Lab and select Activity 23.

Enter any decimal from 0 to 1.00.

1. How many squares are shaded? _____

2. Does the model match the decimal you entered? _____

3. Enter the number shown in Example 2 into the computer. Add 9 hundredths. What sum do you get? _____

Follow the directions on the computer to add 9 hundredths. Record the sum. _____

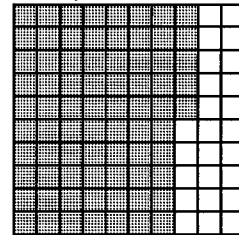
Are the answers the same? _____

4. Take away 40 hundredths. What difference do you get? _____

Follow the directions on the computer to subtract 40 hundredths. Record the difference. _____

Are the answers the same? _____

Example 2



Enter the numbers in the problems below. Make the changes. Watch how the model changes in each problem. Record the final results.

5. Start with 0.69. Add 25 hundredths. _____

6. Start with 0.71. Subtract 17 hundredths. _____

7. Start with 0.53. Add 0.43. _____

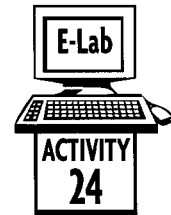
8. Start with 0.84. Add 0.10. Then subtract 0.09. _____

9. Start with 0.26. Add 0.07. _____

10. Start with 0.97. Subtract 0.19. _____

11. Start with 0.48. Add 0.13. Then subtract 0.27. _____

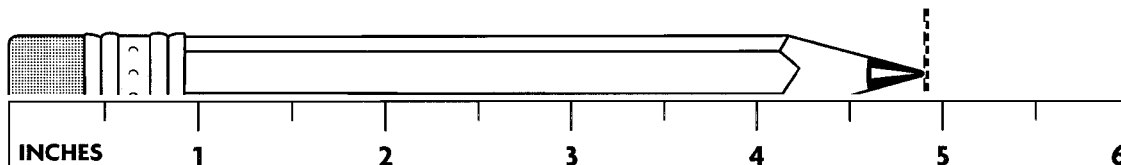
There are 100 hundredths in 1 one.



Estimating Customary Length

The length of an object can be estimated. Sometimes you estimate length to the nearest inch. With a ruler marked in inches, you can measure to the nearest inch.

This ruler is numbered in inches.

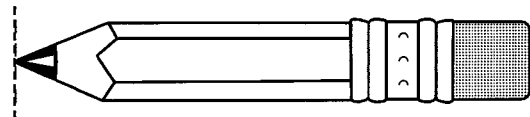


1. One end of this pencil is lined up with the start of the inch scale. Between what two numbers is the other end? _____

Which number is nearer the point? _____

2. What is the length of the pencil to the nearest inch? _____ inches

3. Estimate to the nearest inch the length of this short stub of a pencil. _____ inches

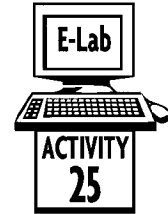


Start E-Lab and select Activity 24.

Click **New Problem**. Lines of different lengths will appear. Measure and record the length of the line to the nearest inch. Enter the length into the computer. Change your answer if you need to.

- | | |
|-------------------------|-------------------------|
| 4. length _____ inches | 5. length _____ inches |
| 6. length _____ inches | 7. length _____ inches |
| 8. length _____ inches | 9. length _____ inches |
| 10. length _____ inches | 11. length _____ inches |

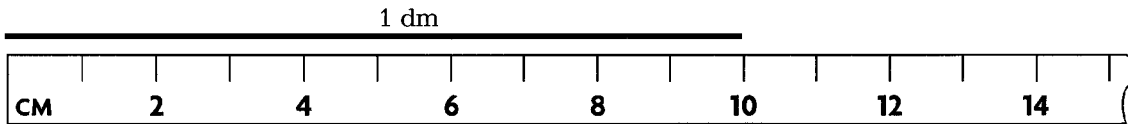
To measure an object with a ruler, line up the left end with the start of the scale and find the inch mark closest to the right end.



Estimating Metric Length

Metric length is estimated and measured in centimeters, decimeters, and meters.

This centimeter ruler can be used to measure centimeters and decimeters.



Use the ruler above. Estimate each length to the nearest centimeter and to the nearest decimeter. If the line is shorter than 1 decimeter, write 0 in the space for decimeters.

1. _____ ___ cm; ___ dm
2. _____ ___ cm; ___ dm
3. _____ ___ cm; ___ dm

Start E-Lab and select Activity 25.

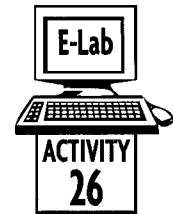
Click **Measure**. Lines of different lengths will come up. Estimate and record the length. Enter your answers into the computer and change them if you need to.

- | | |
|--------------------------------|--------------------------------|
| 4. estimate of length _____ cm | 5. estimate of length _____ cm |
| 6. estimate of length _____ cm | 7. estimate of length _____ cm |
| 8. estimate of length _____ cm | 9. estimate of length _____ cm |

Click **Units**. Different objects will appear along with a ruler. Choose the best metric unit from centimeter or decimeter. Enter your answer into the computer. Write cm or dm. Change your answer if you need to.

- | | |
|-----------------------------|-----------------------------|
| 10. object _____ unit _____ | 11. object _____ unit _____ |
| 12. object _____ unit _____ | 13. object _____ unit _____ |

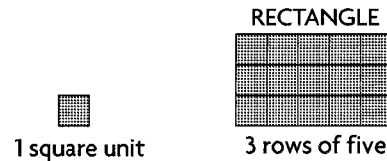
Some metric units of length are centimeters and decimeters.



Finding Area

To find the *area* of a flat surface, find the number of square units needed to cover it.

The drawing shows that 5 square units fit in a row across this rectangle. To find the area, count the number of square units in the 3 rows.



1. How many square units are needed to cover the rectangle? _____
2. What is the area of the rectangle? _____ square units

Start E-Lab and select Activity 26.

3. Click **Change Length**. Click the arrows on the computer to make a rectangle with a length of 1 unit. The width will always be 4 units. Then increase the length, one unit at a time. Watch how the area changes. Record the length and area.
4. Click **Change Width**. Now make a rectangle with a width of 1 unit. The length will always be 4 units. Then increase the width, one unit at a time. Watch how the area changes. Record the width and area.

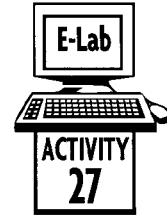
CHANGING LENGTH	WIDTH	CHANGING AREA
	4	
	4	
	4	
	4	
	4	
	4	
	4	
	4	
	4	

CHANGING LENGTH	CHANGING WIDTH	CHANGING AREA
4		
4		
4		
4		
4		
4		
4		
4		
4		

Look at the data in the tables.

5. If the length is doubled, is the area doubled? _____
6. If the width is doubled, is the area doubled? _____

If you double the length or width of a rectangle, you double its area.

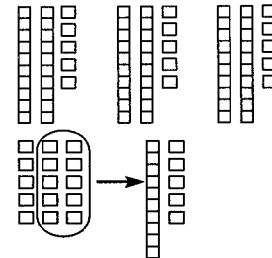


Modeling Multiplication

You can model multiplication with base-ten blocks. Just build and combine equal groups. Regroup as needed.

Model 3×25 as 3 groups of 25.

1. Each 25 has _____ tens and _____ ones.
Together, there are _____ tens and _____ ones.
2. Regroup. 15 ones = 1 ten and _____ ones.
Combine the tens to get _____ tens.
3. What is the product? $3 \times 25 =$ _____



Start E-Lab and select Activity 27.

Click **New Problem**.

4. Follow the directions on the computer and enter 3 for the first number and 25 for the second number. Click **Combine**. Then, click **Regroup**. Watch how the ones are regrouped. Click **Check**. How does the product compare to your answer above? _____
5. Repeat with 3 groups of 52.
Do you need to regroup the ones? _____ the tens? _____
What is the product of 3×52 ? _____

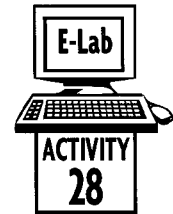
Enter these numbers. Write the product.
Do you need to regroup? Write *yes* or *no*.

- | | | |
|--------------------------|--------------------------|--------------------------|
| 6. $4 \times 16 =$ _____ | 7. $3 \times 37 =$ _____ | 8. $5 \times 21 =$ _____ |
| Regroup? _____ | Regroup? _____ | Regroup? _____ |

Now, enter 6 for the first number. This time select your own two-digit choice for the second number. Click **Regroup** if you think you need to regroup the ones. You may need to click **Regroup** more than once. Otherwise, click **Check**. Record the multiplication sentence.

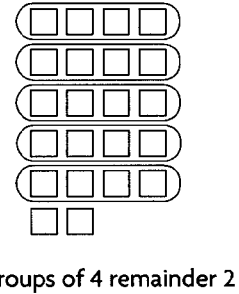
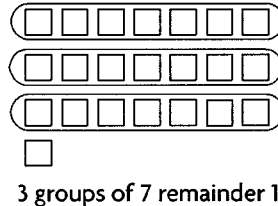
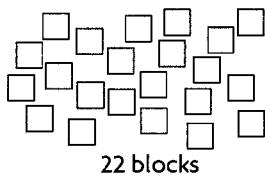
9. $6 \times$ _____ $=$ _____ 10. $6 \times$ _____ $=$ _____ 11. $6 \times$ _____ $=$ _____

Multiplication can be modeled by combining a number of equal groups and regrouping if needed.



Dividing with Remainders

A set of blocks can be divided into equal groups.
The number of blocks left over is called the *remainder*.



- Model 22 divided by 3.
How many blocks are in each of the 3 groups? _____
How many blocks are left over? _____
Record the quotient and remainder. $22 \div 3 =$ _____
- Model 22 divided by 5.
How many blocks are in each of the 5 groups? _____
How many blocks are left over? _____
Record the quotient and remainder. $22 \div 5 =$ _____

Start E-Lab and select Activity 28.

Follow the directions to enter each of the division problems. Watch how the division is shown using equal groups. Record each quotient and remainder.

3. $27 \div 5 =$ _____ 4. $22 \div 6 =$ _____ 5. $19 \div 4 =$ _____

Now, record the quotient and remainder before you enter the problem. Then, enter the problem and check your answer. Put a check next to the ones you got right.

6. $17 \div 2 =$ _____ 7. $32 \div 7 =$ _____ 8. $16 \div 3 =$ _____

Now, enter your own division problems. Make the first number a 2-digit number and the second a 1-digit number. Record each division.

9. _____ \div _____ = _____
10. _____ \div _____ = _____
11. _____ \div _____ = _____

Model division by making as many equal groups as possible. Whatever is left over is the remainder.



Note: If a question does not have an answer, the answer depends on the outcome of the computer program.

- Activity 2** 1. 3, 5; 4, 7 2. 12; 2; 8 3. 82 5. $35 + 47 = 82$ 7. $73 + 54 = 127$ 12. 131
13. 111 14. 99 15. 100
- Activity 3** 1. 4, 5; 2, 8 2. 15; 7; 1 3. 17 5. $66 - 27 = 39$ 7. $54 - 28 = 26$ 8. 34
9. 14 10. 27
- Activity 4** 1. 22 2. yes; 22
- Activity 5** 1. 1:21 2. 4:07 3. 11:28 4. 4:46 5. 6:37 6. 12, 60
- Activity 6** 1. 6:30, 8:15 2. 1, 45 3. one hour, forty-five minutes
- Activity 7** 1. 50¢ 2. 50¢, yes
- Activity 8** 1. 3, 6, 9, 12, 15, 18, 21, 24, 27, 30 2. 93, 96, 99 7. 32 8. Every fourth square should be shaded in.
- Activity 9** 1. 3 2. 600 3. 10 4. 10 red tens were regrouped as 1 yellow hundred.
5. red rectangle, yellow square 6. no check mark 7. check mark 8. check mark
9. no check mark 10. 10 yellow hundreds were regrouped as 1 blue thousands block; a blue cube; 10 11. check mark 12. check mark 13. no check mark
14. check mark
- Activity 10** 1. 200; 300 2. 500; 600 3. 572; 257
- Activity 11** 1. 10 2. 4; 12 3. 4; 4; 16 10. Check student diagrams for three groups of 5 differently shaded blocks. 11. Check student diagrams for six groups of 2 differently shaded blocks.
- Activity 12** 1. $2 \times 10 = 20$ 2. $4 \times 5 = 20$
- Activity 13** 1. 15, 5, 3 2. $15 \div 3 = 5$
- Activity 14** 1. Check students' drawings. 2. $6 \times 5 = 30$ 3. $30 \div 5 = 6$ 4. 63; 7; 9
5. 24; 3; 8 6. 35; 7; 5 7. 54; 6; 9 8. 36; 4; 9 9. 6 10. 4 11. 8 12. 12
- Activity 15** 6. Possible answer: No; by looking at the same parts of the tables.
- Activity 16** 3. shorter 4. a. The bars in the first graph should be the same height. b. The bars in the second graph should show step increases of 1 unit.
- Activity 17** 2. Fewer times, because there are more possible number choices. 4. fewer times
5. Only a few times; there are more number choices. 6. Many times; there are only a few number choices.

Activity 18 1. 6; rectangles 2. 5; triangles and a square 9. pyramid 10. 5; 5

Activity 19 1. 3; 3 2. 4, 4; 6, 6 3. 6; yes; they are the same size and shape. 4. 4; yes 5. 3; yes
6. yes 7. no 8. yes

Activity 20 4. yes; yes

Activity 21 1. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$ 2. yes 3. yes 12. $\frac{2}{3}$, $\frac{4}{6}$ 13. $\frac{1}{4}$, $\frac{2}{8}$ 14. $\frac{8}{10}$, $\frac{4}{5}$

Activity 22 1. 18; 3 2. 3 columns of 2 circles each should be shaded. 10. $\frac{2}{4}$ or $\frac{1}{2}$ 11. $\frac{3}{6}$ or $\frac{1}{2}$
12. $\frac{2}{4}$ or $\frac{1}{2}$ 13. $\frac{1}{2}$

Activity 23 3. 0.84, 0.84, yes 4. 0.44, 0.44, yes 5. 0.94 6. 0.54 7. 0.96 8. 0.85 9. 0.33 10. 0.78
11. 0.34

Activity 24 1. 4, 5; 5 2. 5 3. 3

Activity 25 1. 10; 1 2. 6; 0 3. 2; 0

Activity 26 1. 15 2. 15 5. yes 6. yes

Activity 27 1. 2, 5; 6, 15 2. 5; 7 3. 75 4. They are the same. 5. no; yes; 156 6. 64; yes
7. 111; yes 8. 105; yes

Activity 28 1. 7; 1; 7 r1 2. 4; 2; 4 r2 3. 5 r2 4. 3 r4 5. 4 r3 6. 8 r1 7. 4 r4 8. 5 r1