

Shapes

Home Link 8-1

NAME _____

DATE _____




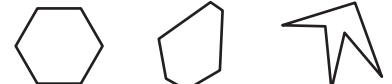
Family Note

In this lesson children examined different shapes, such as triangles, quadrilaterals, pentagons, and hexagons. They also discussed these shapes' attributes—or characteristics—such as the number of sides, the number of angles, whether the sides are parallel, and whether the angles are right angles.

Look at the various shapes shown below. Examples of these shapes can be found in objects you see every day, such as yield signs (which resemble triangles) or TV screens (quadrilaterals). As your child cuts out pictures of shapes, discuss each one. Count the number of sides and angles and try to name the shapes. Talk about how they are alike and how they are different.

Please return this Home Link to school tomorrow or as requested by the teacher.

- ① Cut out pictures from newspapers and magazines that show 3-sided, 4-sided, 5-sided, and 6-sided shapes. Ask an adult for permission first.
- ② Glue or tape each picture to a sheet of paper.
- ③ Label some of the pictures with their shape names.
- ④ Bring your pictures to school.

<p>Triangles</p> 	<p>Quadrilaterals</p> 
<p>Pentagons</p> 	<p>Hexagons</p> 

Practice

Unit

Add.

⑤ $24 + 12 = \underline{\quad}$ ⑥ $33 + 19 = \underline{\quad}$ ⑦ $47 + 36 = \underline{\quad}$

214 two hundred fourteen

Attributes of Shapes

Home Link 8-2

NAME _____

DATE _____

Family Note

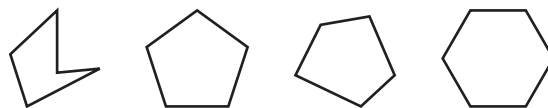
In this lesson children played a game called *Shape Capture*, in which they “captured” shapes based on attributes: the number of sides, the number of angles and vertices, the number of right angles, the number of pairs of parallel sides, and side lengths. After your child has completed the Home Link, discuss how the shapes he or she circled are different from the others.

Please return this Home Link to school tomorrow.

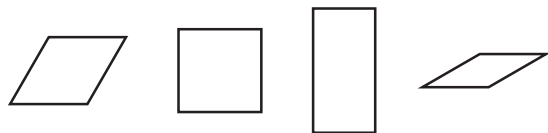
- ① Look at the number of right angles. Circle the shape(s) with 1 right angle.



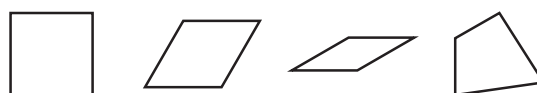
- ② Look at the number of sides and angles. Circle the shape(s) with 5 sides and 5 angles and 5 vertices.



- ③ Look at the lengths of the sides. Circle the quadrilateral(s) with 2 pairs of equal-length sides.



- ④ Look at the opposite sides. Circle the quadrilateral(s) with one or more pairs of parallel sides.



Shapes Museum

Home Link 8-3

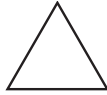
NAME _____

DATE _____

Family Note

In today's lesson children used straws and twist ties to build polygons and then drew the shapes. Children learned that polygons are closed figures made up of all straight sides that do not cross.

Polygons:



NOT polygons:



Please return the top part of this Home Link to school tomorrow.

For Problems 1–3, draw the polygon and write its name on the line.



- ① 6-sided polygon: ② 5-sided polygon: ③ 4-sided polygon:

- ④ Are these three shapes all polygons? Explain.

Shapes Museum

For the next few days our class will collect items to put into a Shapes Museum. Starting tomorrow, bring items such as boxes, soup cans, party hats, pyramids, and balls to school. Ask an adult for permission to bring in these items.

Drawing Shapes

Home Link 8-4

NAME _____

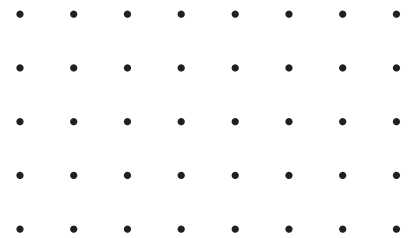
DATE _____

Family Note

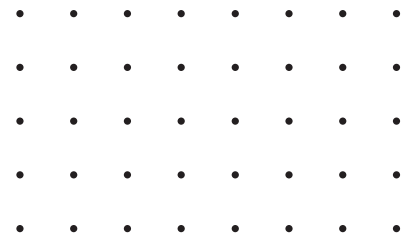
In this lesson your child learned about attributes of quadrilaterals (four-sided figures). We drew quadrilaterals with certain numbers of right angles and wrote about how we knew the shape had the correct attributes. We will revisit how to recognize and draw quadrilaterals and other shapes for the rest of the school year.

Please return this Home Link to school tomorrow.

- ① Draw a quadrilateral that has four right angles.
Use the dots to help you.



- ② Draw a triangle that has one right angle.
Use the dots to help you.



- ③ Name something that is different about a quadrilateral and a triangle.

- ④ Show someone at home how you can test if an angle is a right angle.

Practice

- ⑤ a.
$$\begin{array}{r} 23 \\ + 38 \\ \hline \end{array}$$
 b.
$$\begin{array}{r} 56 \\ + 17 \\ \hline \end{array}$$
 c.
$$\begin{array}{r} 26 \\ + 68 \\ \hline \end{array}$$
 d.
$$\begin{array}{r} 36 \\ + 36 \\ \hline \end{array}$$

3-Dimensional Shapes

Home Link 8-5

NAME _____

DATE _____

Family Note

In this lesson children described and compared different 3-dimensional shapes. The class also created a Shapes Museum using the objects children brought to school. Read the list of shapes below with your child. Together, find examples of the shapes.

Please return this Home Link to school tomorrow.

Work with someone to make a list of things that have these shapes.



① Cube



② Rectangular prism



③ Cylinder



Practice

Add.

④
$$\begin{array}{r} 21 \\ + 24 \\ \hline \end{array}$$

⑤ $36 + 14 = \underline{\hspace{2cm}}$

⑥
$$\begin{array}{r} 38 \\ + 56 \\ \hline \end{array}$$

Unit

Partitioning Rectangles

Home Link 8-6

NAME _____

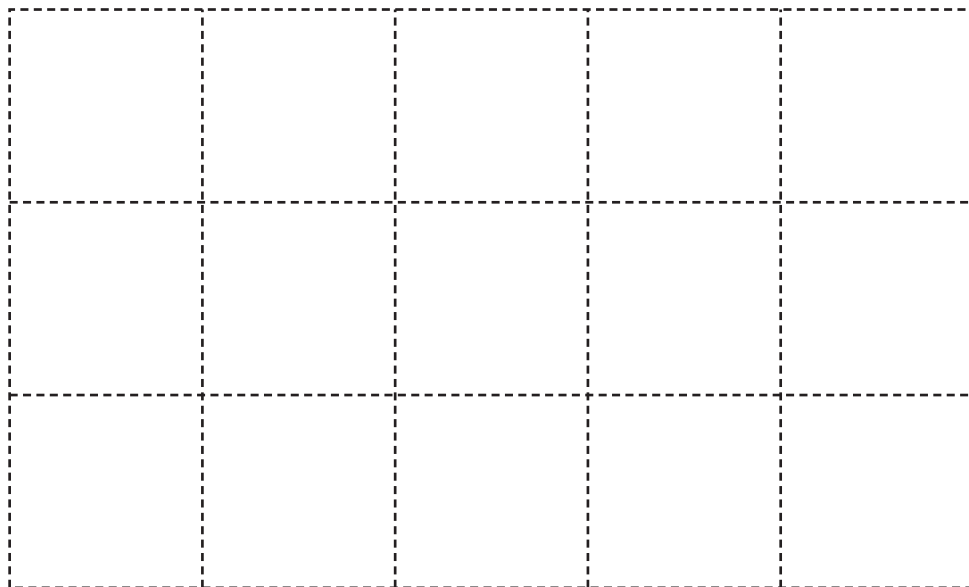
DATE _____

Family Note

In class today your child learned how to use same-size shapes to partition, or divide, a shape into smaller shapes. Understanding how to partition shapes helps lay the foundation for area measurement in Grade 3. Help your child cut out the squares below and use them to completely cover Rectangle A on the next page without gaps or overlaps. After the squares are positioned, your child can glue or tape them in place. Then your child will draw lines on Rectangle B to show how the squares are arranged on Rectangle A. He or she can use one of the extra squares to help with the partitioning. Do not expect the squares your child draws to be exactly the same size. The goal is for your child to draw the correct number of squares arranged in rows and columns.

Please return the second page of this Home Link to school tomorrow.

- Carefully cut out the small squares below.
- Use the squares to completely cover Rectangle A on the next page without any overlaps or gaps. You will not need them all.
- Glue or tape the squares in place.
- Draw lines on Rectangle B to show where you put the squares on Rectangle A.
- Answer the questions below the rectangles.



Partitioning Rectangles (continued)

Home Link 8-6

NAME _____

DATE _____



Rectangle A



Rectangle B

- ① How many squares did you use to cover Rectangle A? _____
- ② How many squares did you draw on Rectangle B? _____

More Partitioning Rectangles

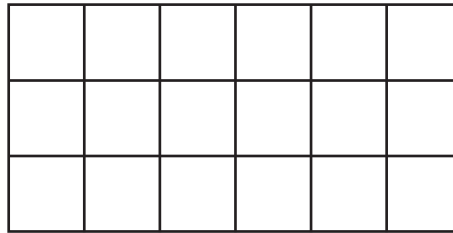
Home Link 8-7

NAME _____

DATE _____

Family Note

In this lesson children continued their work partitioning rectangles into same-size squares. They used a square block and then a picture of a square to help them determine the size of the squares needed to cover their rectangles. Finally, they partitioned rectangles into given numbers of rows with a specific number of squares in each row. Children are not expected to draw perfect rows of squares. The goal of the activity below is for them to make rows that are close to the same height and squares that are about the same size.

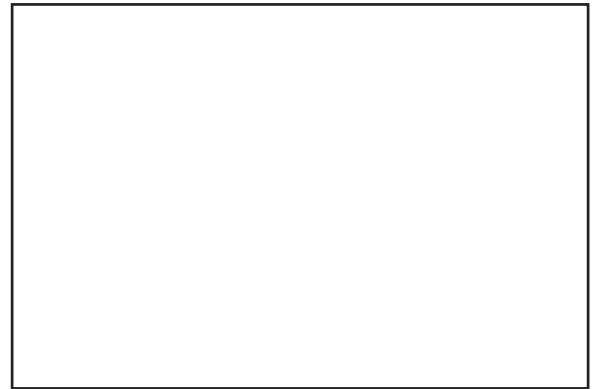


A rectangle partitioned into 3 rows with 6 squares in each row

Please return this Home Link to school tomorrow.

- ① Partition this rectangle into 2 rows with 3 same-size squares in each row.

How many squares cover the rectangle? _____



Practice

②
$$\begin{array}{r} 18 \\ + 21 \\ \hline \end{array}$$

③ $46 + 34 = \underline{\hspace{2cm}}$

④
$$\begin{array}{r} 59 \\ + 37 \\ \hline \end{array}$$

Unit

Familiar Groups and Arrays

Home Link 8-8

NAME _____

DATE _____

Family Note

In today's lesson your child solved number stories about equal groups and arrays. Equal groups are groups that all have the same number of objects. Arrays are rectangular arrangements of objects or symbols in rows and columns. Arrays show equal groups because each row in an array has the same number of objects, and each column has the same number of objects. You can find equal groups and arrays in many real-life objects and situations, such as those shown below. Your child can find the total number of objects efficiently by adding the number of objects in each group, row, or column. For example, to find how many dots are in 2 rows of 3 dots each on a die, you could find $3 + 3 = 6$. Or you could view the die as having 3 columns of 2 dots each and find $2 + 2 + 2 = 6$. To find how many fingers are on 2 hands with 5 fingers each, you could add $5 + 5 = 10$.

Please return this Home Link to school tomorrow.

Find the total number of objects in each picture. Then write a number model.

Example:



There are 6 dots.

Number model:

$$3 + 3 = 6$$

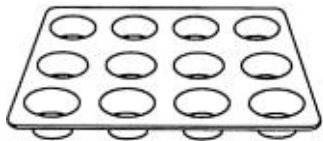
①



There are _____ fingers in all.

Number model:

②



There are _____ muffin cups.

Number model:

③



There are _____ shoes in all.

Number model:

Drawing Arrays

Home Link 8-9

NAME _____

DATE _____

Family Note

In today's lesson your child used counters to show equal groups and arrays and then wrote number models to represent the counters. Encourage your child to use pennies or other small objects to help solve these problems.

Please return this Home Link to school tomorrow.

- ① Draw 4 equal groups with 3 in each group.

Number model:

How many in all? _____

- ② Draw an array with 5 rows and 3 objects in each row.

Number model:

How many in all? _____

- ③ Draw an array with 2 columns and 4 objects in each column.

Number model:

How many in all? _____

Practice

Solve.

④
$$\begin{array}{r} 23 \\ + 32 \\ \hline \end{array}$$

⑤ $63 + 28 = \underline{\hspace{2cm}}$

⑥
$$\begin{array}{r} 45 \\ + 49 \\ \hline \end{array}$$

Unit

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Playing Array Concentration

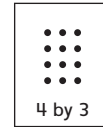
Home Link 8-10

NAME _____

DATE _____

Family Note

Today your child played a game called *Array Concentration* to practice finding the total number of objects in arrays and writing matching addition number models. In this game children match each array card with the number card that shows the total number of dots in the array. For example, the array card and the number card at the right “match.”

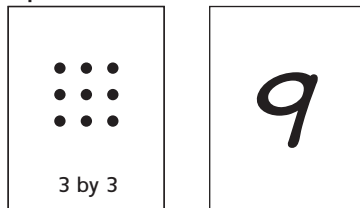


12

Please return this Home Link to school tomorrow.

Celia is playing *Array Concentration*. Her matches are shown below. Fill in the numbers on the number cards and write number models for the arrays.

Example:

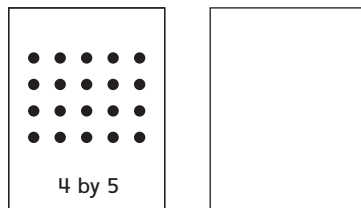


9

Number model:

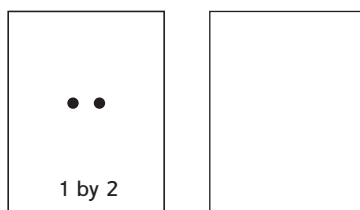
$$3 + 3 + 3 = 9$$

①



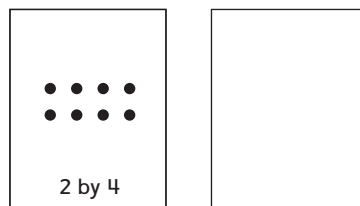
Number model:

②



Number model:

③



Number model:

Writing a Shape Riddle

Home Link 8-11



NAME

DATE

Family Note

In this lesson your child learned to recognize a 2-dimensional shape based on specific attributes, such as the following:

- number of angles
- number of sides
- number of pairs of parallel sides
- number of right angles

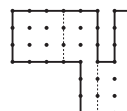
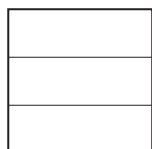
Using these attributes of 2-dimensional shapes, ask your child to write a shape riddle. *For example:* I am a shape that has 3 sides and 3 angles. I have no parallel sides. What shape am I? (The answer is “a triangle.”) Your child can share the riddle with a family member or a friend.

Please return this Home Link to school tomorrow.

- ① Make up your own shape riddle. Give it to someone to solve.

Equal Shares and Whole Number Operations

In Unit 9 children partition shapes into same-size parts, or equal shares. They practice using fraction vocabulary to name these equal shares and learn that equal shares do not necessarily have to be the same shape.



These equal shares are the same shape. **These equal shares are not the same shape.**

Children also work with fractional units of length. They identify half-inches and quarter-inches on their rulers and measure objects to the nearest half-inch.

Later in the unit, children extend their work with place value to the thousands place and apply their understanding of place value to learn a new subtraction method called *expand-and-trade subtraction*. Children learn the expand-and-trade method by using expanded form to think about making trades.

Example: $45 - 27$.

$$\begin{array}{r} 45 \\ - 27 \\ \hline \end{array} \rightarrow \begin{array}{r} 30 \quad 15 \\ 40 + 5 \\ - 20 - 7 \\ \hline 10 + 8 = 18 \end{array}$$

Expand-and-trade subtraction will be reviewed in Grade 3. By the end of Grade 2, children are expected to subtract within 1,000 using any strategy or method.

In the final part of the unit, children review the values of coins and find coin combinations to pay for a variety of items using exact change. They use dimes and nickels as a context for finding multiples of 10 and 5 and also use doubling and doubles facts as a context for finding multiples of 2. These activities lay the foundation for multiplying by 2, 5, and 10 early in Grade 3.

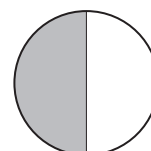
Please keep this Family Letter for reference as your child works through Unit 9.

Vocabulary

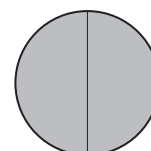
Important terms in Unit 9:

one-half (1-half) A name for 1 out of 2 equal shares. The standard notation for one-half is $\frac{1}{2}$, but children do not use standard notations in Grade 2.

two-halves (2-halves) A name for the whole when it is divided into 2 equal shares. The standard notation for two-halves is $\frac{2}{2}$.



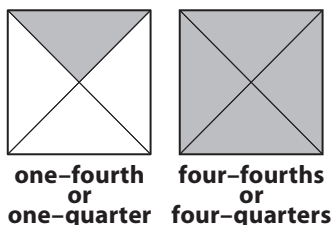
one-half



two-halves

one-fourth (1-fourth) A name for 1 out of 4 equal shares. The standard notation for one-fourth is $\frac{1}{4}$. Also called *one-quarter* or *1-quarter*.

four-fourths (4-fourths) A name for the whole when it is divided into 4 equal shares. The standard notation for four-fourths is $\frac{4}{4}$. Also called *four-quarters* or *4-quarters*.



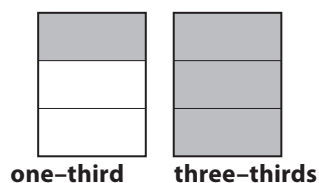
equal share Another name for equal parts. The result of dividing something into parts that are all the same size.



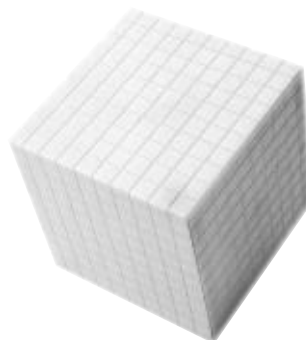
Home Links 9-1 and 9-2 provide more information about equal shares and the fraction language that appears in the definitions on this page.

one-third (1-third) A name for 1 out of 3 equal shares. The standard notation for one-third is $\frac{1}{3}$.

three-thirds (3-thirds) A name for the whole when it is divided into 3 equal shares. The standard notation for three-thirds is $\frac{3}{3}$.



thousand cube In *Everyday Mathematics*, a base-10 block that measures 10 cm by 10 cm by 10 cm. A thousand cube consists of one thousand 1-centimeter cubes.



A thousand cube

expand-and-trade subtraction A subtraction algorithm in which expanded notation is used to facilitate place-value exchanges. Home Links 9-6 and 9-7 provide more information about expand-and-trade subtraction.

multiple The product of a certain number and any counting number. For example, the multiples of 2 are 2, 4, 6, 8, and so on (because those numbers are obtained by multiplying 2 by 1, 2, 3, 4, and so on, respectively). The multiples of 5 are 5, 10, 15, 20, and so on. And the multiples of 10 are 10, 20, 30, 40, and so on.

Do-Anytime Activities

To work with your child on Grade 2 concepts, try these interesting and rewarding activities:

1. Ask your child to divide food items or other objects into 2, 3, or 4 equal parts. For example, ask your child to fairly share a sandwich with a sibling or cut a piece of paper into four pieces that are the same size. Ask your child to name the parts of the object using language such as *one-half*, *1-third*, or *1 out of 4 equal parts*. Then ask your child to name the whole object using language such as *whole*, *three-thirds*, or *4-fourths*.
2. Have your child measure the lengths of objects to the nearest inch and use the measurements to compare the objects. When your child is comfortable measuring to the nearest inch, have him or her measure the same objects to the nearest half-inch.

3. Pose subtraction problems involving 2-digit numbers and ask your child to explain his or her strategy for solving them.
4. Point to an item in a store or an ad and have your child tell you what coins and bills he or she could use to pay for the item with exact change.

Building Skills through Games

In Unit 9 your child will play the following games to practice his or her mathematical skills.

Array Concentration

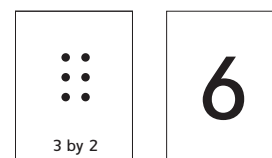
Players arrange a set of *Array Concentration* Number Cards and Array Cards facedown in front of them. A player flips over one of each type of card. If the cards “match”—that is, if the number on the number card equals the total number of dots in the array—the player takes the cards and takes another turn.

Shape Capture

Players have a set of Shape Cards spread out in front of them. One at a time players draw an Attribute Card and “capture” all the shapes that have that attribute. The player who captures the most shapes wins.

Beat the Calculator

One player is the Caller, who names two 1-digit numbers. Another player is the Brain, who adds the two numbers mentally. A third player is the Calculator, who adds the numbers with a calculator. The Brain tries to find the sum faster than the Calculator.



These cards match because there are 6 dots in the array.

Hit the Target

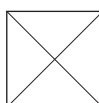
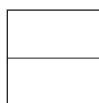
Players choose a 2-digit multiple of 10 (such as 10, 20, or 30) as a target number. One player chooses a starting number less than or greater than the target number, which the second player enters into a calculator. The second player tries to change it to the target number by adding or subtracting on the calculator.

As You Help Your Child with Homework

When your child brings home assignments, you may want to go over the instructions together, clarifying them. The answers listed below will guide you through the Unit 9 Home Links.

Home Link 9-1

1. one-half; 1-half; 1 out of 2 equal parts; 2-halves; two-halves; 2 out of 2 equal parts
2. 1 out of 4 equal parts; 1-fourth; one-quarter; whole; four-fourths; 4 out of 4 equal parts



Home Link 9-2

1. Sample answer: 1 out of 2 equal parts; 2 out of 2 equal parts
2. Sample answer: 1-third; three-thirds

Home Link 9-3

1. Sample answer:



2. Sample answer: Cut the rectangle out and fold it along the lines to see if the parts are the same size.

3. Sample answers: 1-fourth; one-quarter

4. Sample answers: four out of four equal shares; 4-fourths

5. 107 6. 47 7. 82

Home Link 9-4

1. About 2 inches
2. Possible answers: 3 and one-half; 3 and 1-half
3. About 2 inches 4.-7. Answers vary.

Home Link 9-5

1. 329 2. 183
3. Three hundred twenty-nine; one hundred eighty-three
4. $400 + 90 + 1$ $400 + 70 + 1$ $491 > 471$
5. $<$ 6. $>$ 7. 158 8. 26 9. 102

Home Link 9-6

1. Sample estimates:
- $50 - 30 = 20$
- ;
- $60 - 35 = 25$
-
- Sample sketch:



2. Sample estimate:
- $60 - 30 = 30$
-
- Sample sketch:

**Home Link 9-7**

1. Sample estimate:
- $60 - 40 = 20$

$$\begin{array}{r} 55 \\ - 37 \\ \hline \end{array} \rightarrow \begin{array}{r} 40 \quad 15 \\ \cancel{50} + \cancel{5} \\ \hline 30 + 7 \\ \hline 10 + 8 = 18 \end{array}$$

2. Sample estimate:
- $80 - 30 = 50$

$$\begin{array}{r} 81 \\ - 28 \\ \hline \end{array} \rightarrow \begin{array}{r} 70 \quad 11 \\ \cancel{80} + \cancel{1} \\ \hline 20 + 8 \\ \hline 50 + 3 = 53 \end{array}$$

Home Link 9-8

1. Possible answers: 10¢ or \$0.10; 50¢ or \$0.50; 100¢ or \$1.00; 250¢ or \$2.50
2. Answers vary.

Home Link 9-9

- 1-2. Sample explanations given.

1. No. 59¢ is almost 60¢, and 49¢ is almost 50¢. $60¢ + 50¢$ is more than \$1.
2. No. $30 + 10 = 40$ and 2 and 8 make another 10, so the total for the radio and headphones is \$50. I couldn't buy the calculator, too.

3. 38 4. 91 5. 25

Home Link 9-10

1. 14 fingers; $7 + 7 = 14$
2. 4 shells; $4 + 4 = 8$
3. 58 4. 130 5. 25

Home Link 9-11

1. 10 cents, 10, 10; 30 cents, 30, 30
2. 40 cents, 40, 40; 70 cents, 70, 70
3. 80 cents, 80, 80; 40 cents, 40, 40
4. 140 5. 43 6. 175