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Strategy 1: Act it out *(cont.)*

Problem 2

Materials:
- five-cent and ten-cent coins
- centimetre ruler
- student activity (page 10)

After they read the problem and before they answer the questions, have students look at the centimetre ruler and coins on the page. Students should note that a ten-cent coin is greater than 2 centimetres and less than 3 centimetres in width, and that a five-cent coin is greater than 1 centimetre and less than 2 centimetres in width. Ask how they can find the exact measures of the coins. (Answers may vary. Students should note that they can use real or play money and a centimetre ruler to find the exact measures.)

Think about:

Read the questions aloud and discuss them if necessary.

- (Answers will vary.)
- (a ten-cent coin)
- (about 1 cm)
- (about 4 ten-cent coins)
- (about 5 five-cent coins)

  To answer the question, students can use rulers to measure the width of one ten-cent coin (about 2.5 centimetres) and one five-cent coin (about 2 centimetres). They can then divide 10 centimetres by the width of each coin. Another approach is to find the width of each group of 3 coins on the page (3 ten-cent coins = about 7 centimetres, 3 five-cent coins = about 6 centimetres). Students can then compare these widths with 10 centimetres to see how many more coins are needed.

Have students work through the problem. To act out the problem, students can use a metre stick or centimetre ruler and coins. They can actually place 30 centimetres of ten-cent coins and 60 centimetres of five-cent coins side by side to find the solution. Students should find that 13 ten-cent coins measure about 30 centimetres and 31 five-cent coins measure about 60 centimetres. Therefore, the value of the ten-cent coins is $1.30 and the value of the five-cent coins is $1.55.

Alternative:

Students can also solve the problem by measuring the diameter of 1 ten-cent coin (about 2.5 centimetres) and 1 five-cent coin (about 2 centimetres). They can then find the number of coins that will make lengths of 30 and 60 centimetres by dividing 30 centimetres by 2.5 for ten-cent coins and 60 centimetres by 2 for five-cent coins. Once they know the number of five- and ten-cent coins in each length, students can find the value of each group of coins and calculate the difference to find the solution.

Solution: five-cent coins; 25¢ more

Challenge:

Which has the greater value: 50 centimetres of ten-cent coins placed side by side or 1 metre of five-cent coins placed side by side? (1 metre of five-cent coins)

Some students will be able to use their experience with Problem 2 to solve this problem. They may observe that the measurements 50 cm and 100 cm are in the same proportion as 30 cm and 60 cm (double). Students also may notice that the value of 10 centimetres of ten-cent coins is less than double that of 10 centimetres of five-cent coins. Therefore, 20 centimetres of five-cent coins will have greater value than 10 centimetres of ten-cent coins. The same will be true of 50 cm and 100 cm.

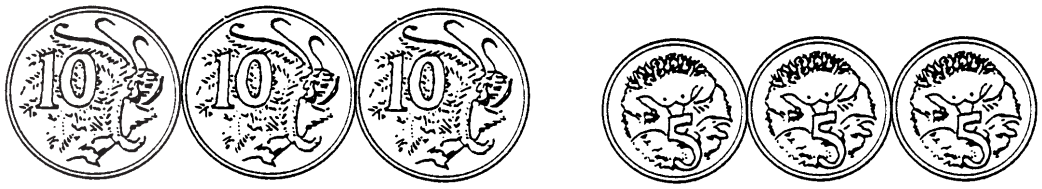
Some students will use none of the above information and will simply measure to solve the problem.

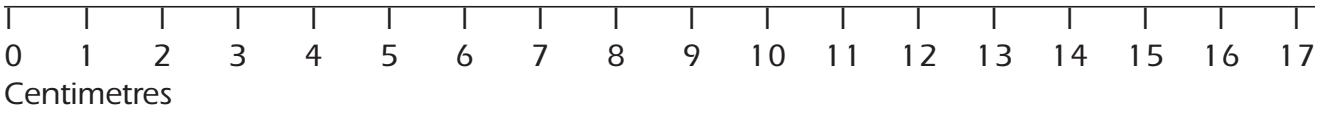
Name: Date:

Act it out *(cont.)*

Problem 2

Which is worth more: 30 centimetres of ten-cent coins placed side by side or 60 centimetres of five-cent coins placed side by side? About how much more?





Think about:

- Which do you think is worth more? Why?
- Which coin is larger?
- About how much longer is the row of 3 ten-cent coins than the row of five-cent coins?
- About how many ten-cent coins will measure 10 centimetres?
- About how many five-cent coins will measure 10 centimetres?

Work with other students. Use real or play money. Act out the problem to find the solution. If you use play money, it should be the same size as real money.

Solution_____

Strategy 1: Act it out *(cont.)*

Problem 3 – On your Own

Materials:

- 30 counters for each pair of students
- student activity (page 13)

Possible acting method: Students work in pairs and use 30 counters to stand for the video games. The student who is playing the role of Paula places 2 counters on the workspace. Since Miguel has 3 times as many games as Paula, the student who is playing that role places 6 counters on the workspace. Because there is a total of 8 counters on the workspace and the problem says that the children have between 20 and 30 games, the pair tries again with 4 and 12 counters, then with 6 and 18 counters.

Solution: Miguel has 18 video games. Paula has 6 video games.

Strategy 1: Act it out *(cont.)*

Problem 4

Materials:
- counters
- student activity (page 13)

Be sure students understand that the even-numbered boys in the problem found no golf balls.

Possible acting method: 12 students work together using golf balls or counters to stand for golf balls. The students count off by ones and then separate into groups of odd- and even-numbered students. To show they found golf balls, each odd-numbered student places his or her number of counters into a pile on the group's workspace. They show 36 counters all together. To show they sold golf balls, each even-numbered student takes one counter from the pile made by the odd-numbered students. The number of remaining counters is the solution.

Alternative:
Another method of acting out the problem is for 12 students to count off and then consecutively add and remove their number of counters from a group workspace. Students can record their work in a chart such as the following:

Person	1	Finds 1 ball	
	2	Sells 1 ball	0 left
	3	Finds 3 balls	
	4	Sells 1 ball	2 left
	5	Finds 5 balls	
	6	Sells 1 ball	4 left
	7	Finds 7 balls	
	8	Sells 1 ball	6 left
	9	Finds 9 balls	
	10	Sells 1 ball	8 left
	11	Finds 11 balls	
	12	Sells 1 ball	10 left
			30 balls left

Point out to students that the number of golf balls left is always even. Help them to see that this is because one less than an odd number of found balls is an even number. Students may also note that the number of balls left every time a ball is sold is 2 less than the number of the person who sold the ball.

Solution: 30 balls

Challenge:
How many golf balls would not be sold if 20 boys worked together as a team? (90 golf balls)