

# Introducing This Year's Mathematics

**Complete the sentences.**

1 Bill had a total of 27¢ in change.  
He has exactly 10 coins.

He must have \_\_\_\_\_ dime(s),  
\_\_\_\_\_ nickel(s), and \_\_\_\_\_ pennies.

2 Mary has a total of 22¢ in change.  
She also has exactly 10 coins.

She must have \_\_\_\_\_ dime(s),  
\_\_\_\_\_ nickel(s), and \_\_\_\_\_ pennies.

**Select numbers from the box to make the sentences true.**

58    24    75    32    81    39    67    46

3  -  = 15

4  -  = 28

5  -  = 19

6  -  = 26

7  -  = 49

8  -  = 42

**Select numbers from the box to form number pairs.  
Subtract the lesser number of the pair from the greater  
number. There will be ten pairs of numbers to compare.**

\$1.06    \$3.29    \$0.85    \$7.14    \$2.77

9 \$ 7.14  
- 3.29  
-----  
\$ \_\_\_\_\_

10 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

11 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

12 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

13 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

14 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

15 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

16 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

17 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

18 \$ \_\_\_\_\_  
- \_\_\_\_\_  
-----  
\$ \_\_\_\_\_

# Investigating Cross Number Puzzles

Complete the puzzles. Remember, amounts on both sides of the thick line must be the same.

**1**

	19	55
	25	18

**2**

57	155	
	100	
7		

**3**

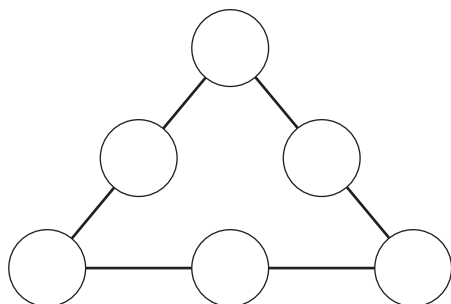
100	34		46
	28	18	44
	18	52	
			100

**4** Sometimes a puzzle may be solved in more than one way. Find two different ways to solve this puzzle.

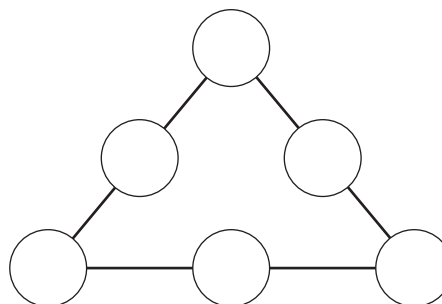
68		
	46	85
107		

68		
	46	85
107		

**5** Use numbers 11–16. Write a number in each circle so each side of the triangle has a sum of 40.



**6** Use numbers 11–16. Write a number in each circle so each side of the triangle has a sum of 42.



# Investigating Input-Output Tables

1 Complete the table.

<b>INPUT</b>	25					
Add 3		26				53
Multiply by 3			42		60	
Subtract 9				30		
Subtract the input						
<b>MACHINE OUTPUT</b>						100

2 Make up your own 2-step rule so that the output is double the input.

MAKE UP YOUR OWN INPUTS.

<b>INPUT</b>	10	25	30				
<b>MACHINE OUTPUT</b>							

3 Make up your own 3-step rule so that the output is double the input.

MAKE UP YOUR OWN INPUTS.

<b>INPUT</b>							
<b>MACHINE OUTPUT</b>							

# Connecting Input-Output Machines and Puzzles

These puzzles may be solved in more than one way.  
Find two different ways for each pair.

1

76		
	21	25

76		
	21	25

2

	45	68
		82

	45	68
		82

The MACHINE OUTPUT puzzle's numbers are all double the numbers in the INPUT puzzle. Solve both puzzles.

3

**INPUT**

			69

**MACHINE OUTPUT**

24	50		110
	44	30	
32		80	
156			

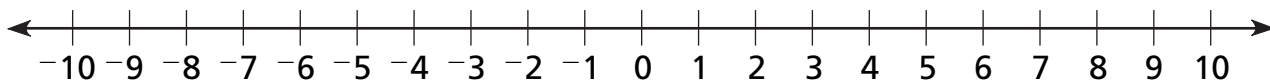
# Introducing Negative Outputs

**Complete the tables.**

<b>1</b>	<b>INPUT</b>	6	12	9	13	24	25
	Double the input						
	Add 24						
	Divide by 2						
	<b>MACHINE OUTPUT</b>						

<b>2</b>	<b>INPUT</b>	6	12	9	13	24	25
	Multiply by _____	60	120	90	130		
		180	240	210		360	
		18	24	21			37
	<b>MACHINE OUTPUT</b>	18	24	21	25	36	37

**Follow the directions. Use the number line.**



- 3** Start at 0.
- Go right 4 units. \_\_\_\_\_
  - Go left 6 units. \_\_\_\_\_
  - Go left 3 units. \_\_\_\_\_
  - Go right 7 units. \_\_\_\_\_
  - Go left 9 units. \_\_\_\_\_

- 4** Start at 0.
- Go left 3 units. \_\_\_\_\_
  - Go left 6 units. \_\_\_\_\_
  - Go right 7 units. \_\_\_\_\_
  - How would you move to end at -5?  
\_\_\_\_\_

# Determining Rules Using Two Operations

Complete the tables and write the shorthand rules that are missing.

1

INPUT	6	0	5	3	1	-3		$x$
OUTPUT	0	-6	-1				-4	

2

INPUT	2	3	0	5	7	9	10	$x$
OUTPUT	2	1	4	-1				$4 - x$

3

INPUT	1	2	4	5	8	12		$x$
OUTPUT	3	9	21				57	

4 Choose your own input numbers. Complete the table.

INPUT						
Multiply by 2						
Add 4						
Divide by 2						
Subtract the original input number						
OUTPUT						

What pattern do you see in the input and output numbers of this table?

\_\_\_\_\_

# Multiplying Cross Number Puzzles

Complete the puzzles.

**1**

1,000	70	8	
1,500	110	21	

$\times 4$

400		16	
	160		

**2**


$\times 12$

24	96	48	
72	12	84	
60	108	36	

**3** Complete the puzzle. Write  $\times$  or  $\div$  in each  $\bigcirc$  and write a number from 1–9 on each line. Use each number only once.

3,500  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  500  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  1,500  $\bigcirc$  \_\_\_\_\_  $\rightarrow$

3,000  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  3,000  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  500  $\bigcirc$  \_\_\_\_\_  $\rightarrow$

2,000  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  400  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  50  $\bigcirc$  \_\_\_\_\_  $\rightarrow$  450