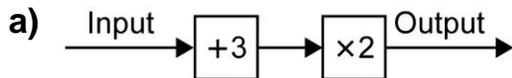
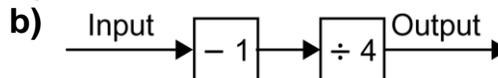


Lesson 1

1. Complete the table for each Input/Output machine.



Input	Output
1	
3	
5	
7	
9	



Input	Output
1	
5	
9	
13	
17	

2. Draw an Input/Output machine with 2 operations that would give the numbers in the table.

Input	Output
4	1
8	3
12	5
16	7

Lesson 2

1. Write the first 6 terms of each pattern. Start at 12 each time.

a) Subtract 4, then multiply by 3.

b) Multiply by 3, then subtract 4.

2. Write each pattern rule.

Then write the next 2 terms.

a) 6, 10, 18, 34, 66, ...

b) 2, 9, 30, 93, 282, ...

c) 4, 6, 14, 46, 174, ...

d) 12, 16, 32, 96, 352, ...

Lesson 3

- Which numbers are divisible by 4? By 6? How do you know?
a) 92 b) 114 c) 216 d) 420 e) 636
f) 680 g) 1026 h) 1252 i) 1278 j) 3036
- Draw a Venn diagram with 2 loops.
Label the loops "Divisible by 3" and "Divisible by 5."
Place the numbers from 1 to 50 in the correct loop.
What is true about all the numbers in the region where the loops overlap?

Lesson 4

- Find the missing number.
a) $25 - \underline{\quad} = 12$ b) $56 = \underline{\quad} \times 8$ c) $\underline{\quad} + 12 = 20$
d) $45 \div \underline{\quad} = 5$ e) $17 = \underline{\quad} - 25$ f) $18 \times \underline{\quad} = 198$
g) $22 - 6 = 3 + \underline{\quad}$ h) $5 \times 6 = 3 \times \underline{\quad}$ i) $3 + 12 = 3 \times \underline{\quad}$
- Replace O and \square with numbers to make an equation.
 $O \times \square = 24$
How many different ways can you do this?

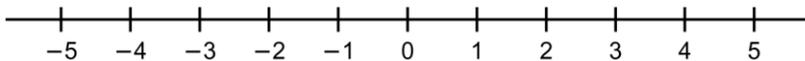
Lesson 5

1. Write an integer to represent each situation.
 - a) The temperature is 8 degrees below 0°C .
 - b) The valley was 700 m below sea level.
 - c) The mountain was 1300 m above sea level.
 - d) Chuck's golf score was 5 below par.

2. A photo of a close finish of a race showed:
 - Janette 3 m ahead of the finish line
 - Simon 1 m ahead of the finish line
 - Brian 2 m behind the finish line
 - Nicole 4 m behind the finish line

Suppose 0 represents the finish line.

Show the position of each racer on the number line.



Additional Activity 1: What's Next?

Work on your own.

Write the next three terms in each pattern. Write each pattern rule.

- 4, 24, 14, 34, 24, _____, _____, _____

Rule:

- 88, 77, 87, 76, 86, _____, _____, _____

Rule:

- 4, 20, 10, 50, 40, _____, _____, _____

Rule:

What is the 8th term in each pattern? Write each pattern rule.

- 144, 132, 120, 108, ...

Rule:

- 166, 177, 188, 199, ...

Rule:

Take It Further: Write two different patterns that begin: 10, 20, 40, ...

For each pattern, list the next 3 terms and write the pattern rule.

Master 1.7**Additional Activity 2: Patterns with Eleven**

Work with a partner.

You will need a calculator.

Each product below has one factor of 11.

- Find each product.

$$14 \times 11 =$$

$$26 \times 11 =$$

$$45 \times 11 =$$

$$53 \times 11 =$$

What patterns do you see in the products?

Write a rule for finding the product of a two-digit number and 11.

- Use your rule to predict these products.

$$16 \times 11 =$$

$$23 \times 11 =$$

$$81 \times 11 =$$

$$33 \times 11 =$$

- Are there any 2-digit numbers for which your rule does not apply? Make up your own multiplication statements to find out.

Take It Further: Find these products.

How are these statements different from those above?

$$56 \times 11 =$$

$$83 \times 11 =$$

Does your rule for multiplying by 11 still work?

Master 1.8

Additional Activity 3: What's Missing?

Work on your own. Find the missing numbers.

Write a rule for each table. Your rule must explain what you do to the input number to get the output number.

1. Rule:

Input	Output
2	6
	12
6	
8	24
10	

2. Rule:

Input	Output
30	6
25	
	4
15	3
10	

3. Rule:

Input	Output
35	
13	0
27	
	35
74	61

Take It Further: Create two different Input/Output tables with missing numbers.

Trade tables with a classmate.

Complete your classmate's tables.

Master 1.9

Additional Activity 4: Perimeter Patterns

Work with a partner.

Use Colour Tiles or grid paper.

Step 1

Build these 4 figures of a growing pattern.

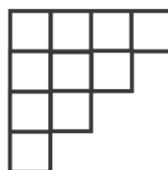
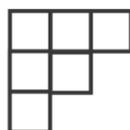


Figure 1

Figure 2

Figure 3

Figure 4

Step 2

Find the perimeter of each figure.

Record your results in the table.

Predict the perimeter of the 5th figure and the 6th figure.

Build the figures to check.

Write a pattern rule for the perimeters.

Figure	Perimeter
1	
2	
3	
4	
5	
6	

Take It Further:

Use Colour Tiles to create your own growing pattern.

Make the first 4 figures.

Trade patterns with your partner.

Repeat Step 2 above for your partner's pattern.