6-7 EXTRA PROBLEMS

LESSON 6-7.1

1. In the table below, the *x*-value is considered the input value and the *y*-value is the output value.

   a. Copy and complete the table.

x	1	2	3	4		6
y	5	6	7		9	

   b. Complete the rate of change statement.
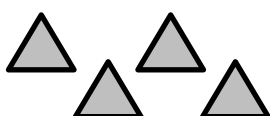   For every increase of *x* by 1, the *y* increases by _____.

   c. Complete the input-output rule.
      Add _____ to the *x*-value to get the corresponding y-value.

   d. Write an equation to represent pattern in the table.

2. Copy the following pattern.

Step 1	Step 2	Step 3	Step 4

   a. Draw step 4.

   b. Copy and complete the table.

Step # (*x*)	1	2	3	4	5
# of triangles (*y*)	3	4	5	6	7

   c. Create a graph with titles and labels.

   d. Write a rule for the pattern.

   e. Which variable represents the input values (independent variable)?

   f. Which variable represents the output values (dependent variable)

3. In the table below, the *x*-value is considered the input value and the *y*-value is the output value.
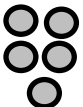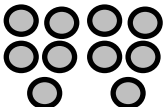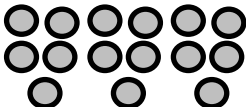
   a. Copy and complete the table.

x	1	2	3	4		6
y	6	12	18		30	

   b. Complete the rate of change statement.
      For every increase of *x* by 1, *y* increases by _____.

   c. Complete the input-output rule.
      Multiply an *x*-value by _____ to get the corresponding *y*-value.

   d. Write an equation to represent pattern in the table.

4. Copy the following pattern.

Step 1	Step 2	Step 3	Step 4

   a. Draw step 4.

   b. Copy and complete the table.

Step # (*x*)	1	2	3	4	5
# of circles (*y*)					

   c. Create a graph with titles and labels.

   d. Write a rule for the pattern.

   e. Find *y* if *x* = 100.

   f. Find *y* if *x* = 1,000.

   g. Find *x* if *y* = 100.

   h. Find *x* if *y* = 1,000.

LESSON 6-7.2

1. A grocery store sells vitamin water in different ways, shown below.

| Single Bottle: $2.00 | 6-pack: $7.80 | 12-pack: $12.00 |

a. Copy and complete a table for each. In the cost column the price is per bottle.

Single Bottle		6-pack		12-pack	
Quantity (x)	Cost in $ (y)	Quantity (x)	Cost in $ (y)	Quantity (x)	Cost in $ (y)
1	2.00	6	7.80	12	12.00
2	4.00	12	15.60	6	6.00
3	6.00	3	3.90	3	3.00
6	12.00	2	2.60	2	2.00
12	24.00	1	1.30	1	1.00

b. Write a rule for each table. Single Bottle: $y = 2x$; 6-pack: $y = 1.3x$; 12-pack: $y = x$

c. Which table indicates the lowest unit rate? 12-pack

d. Which table indicates the highest unit rate? Single Bottle

e. Explain how you know which of the three is cheapest based on $x = 3$.
They cost $6, $3.90, and $3.00 for 3 bottles. The cheapest is $3.00 (12-pack).

f. You need exactly 29 bottles of vitamin water and don't want to buy more than you need. You want to pay the least amount for vitamin water possible without having extra bottles. List the best way to buy 29 bottles. Show your work.
(2) 12-packs, (5) single bottles, $34.00

g. You decide that you don't care if you have extra bottles of water. List the cheapest method to buy at least 29 bottles of vitamin water.
(2) 12-packs, (1) 6-pack, $31.80

LESSON 6-7.2
Continued

2. As Eva prepares for a new school year, she decides to graph different pencil prices to analyze which is the better buy.
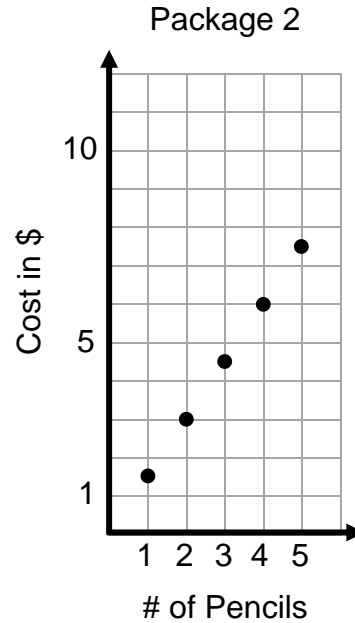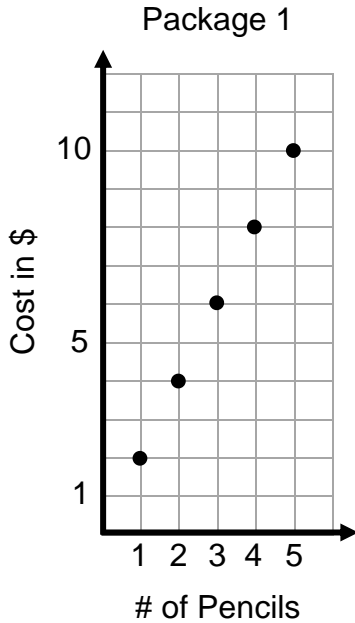
Package 1

Package 2

a. Using the data from the graphs, copy and complete the tables.

Package 1	
Quantity (x)	Cost in $ (y)
1	2.00
2	4.00
3	6.00
10	20.00
50	100.00

Package 2	
Quantity (x)	Cost in $ (y)
1	1.50
2	3.00
3	4.50
10	15.00
50	75.00

b. Write a rule for each. $y = 2x$; $y = 1.50x$

c. Which graph illustrates a greater cost increase per each additional pencil? How can you see this when comparing the graphs?
Package 1 because there is a greater/faster increase in cost per quantity; the slope is steeper.

LESSON 6-7.3

1. Harvest Middle School has an 8th grade dance at the end of the year to raise funds for various programs. They charge $8 per ticket.
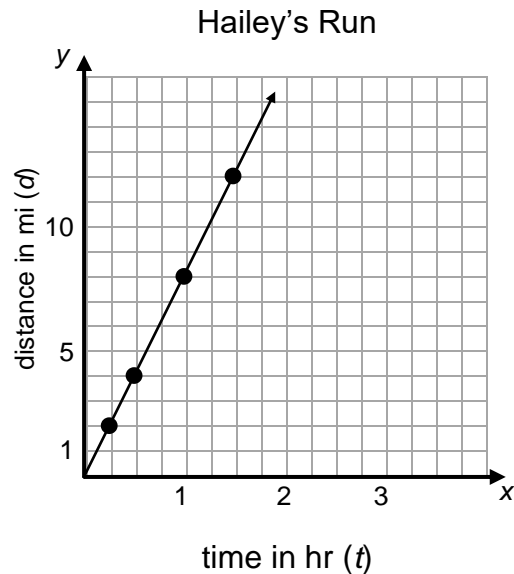
   a. Copy and complete the following tables.

Table 1	
# of tickets sold (t)	Money earned in $ (m)
1	8
2	16
5	40
12	96
50	400

Table 1	
Money earned in $ (m)	# of tickets sold (t)
8	1
16	2
32	4
80	10
200	25

   b. Write two different equations that relate t and m: $m =$ ___8t___ ; $t =$ $\frac{m}{8}$ or $\frac{1}{8}m$

   c. How much will 2,000 tickets cost? $16,000

   d. The school wants to earn $3,000 from ticket sales. How many tickets do they need to sell? 375 tickets

2. Hailey is training for a half marathon. The graph at the right shows her run today. She ran at a constant rate.

   Hailey's Run

   a. How many miles did she run in 1 hour?
      8 miles

   b. How far did she run in 1.5 hours?
      12 miles

   c. How long did it take her to run 4 miles?
      0.5 hours

   d. Write an equation for distance in terms of time.
      d = 8t

   e. At this rate, how many hours would it take Hailey to run 15 miles?
      1.875 hours or $1\frac{7}{8}$ hours or 1 hour $52\frac{1}{2}$ min

LESSON 6-7.3
Continued

3. Shivon swims 400 meters in 8 minutes at a constant rate.

   a. Copy and complete the table.

Time in min (t)	8	4	1	0.5	0.25	0.75
Distance in meters (d)	400	200	50	25	12.5	3.75

   b. Write an equation that relates distance and time. $d = 50t$

4. Willow swims 300 meters in 12 minutes at a constant rate.

   a. Copy and complete the table.

Time in min (t)	12	6	1	0.5	0.25	0.75
Distance in meters (d)	300	150	25	12.5	6.25	1.875

   b. Write an equation that relates distance and time. $d = 25t$

5. Who is swimming at a faster rate, Shivon or Willow? Explain how you know.
   Shivon is swimming 50 meters per minute which is faster than Willow at 25 meters per minute

6. Kendall rode a bike 24 miles in 180 minutes at a constant rate.

   a. How far did he ride in 15 minutes? 2 miles

   b. How long did it take him to ride 6 miles? 45 minutes

   c. How fast did he ride in miles per hour? 8 miles/hour

   d. What is his pace in minutes per mile? 7.5 minutes/mile