Name _____ Date _____ Period _____

LESSON 9-1 · HOMEWORK PACKET · SHEET 1 OF 2

Independent and Dependent Variables

Maryland Standard 6.EE.C.9 · Learning target – I can name the independent and dependent variables in a relationship.

REMEMBER

- The **independent variable** is the input you choose or control.
- The **dependent variable** is the output. It **depends on** the input.
- On a graph: independent on the **x-axis**, dependent on the **y-axis**.

WORKED EXAMPLE

The more cars Andre washes, the more money he earns. Name the variables.

Step 1 Andre controls how many cars he washes.

Step 2 Test: "Money earned depends on cars washed." It makes sense.

Answer **Independent: cars washed · Dependent: money earned**

PRACTICE

show your work · label units

1. For each pair of quantities, write **I** under the independent variable and **D** under the dependent variable.

	Quantity	I or D	Quantity	I or D
a.	minutes biking		miles traveled	
b.	total cost		tickets bought	
c.	guests at a party		cups of juice needed	

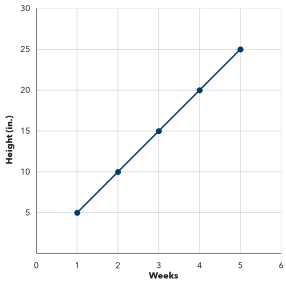
2. **Bus Ride.** The longer Imani rides the bus, the farther she gets from home. Write a sentence about these two quantities that uses "depends on."

Sentence _____

3. **Dog Walking.** Rosa earns $6 per dog she walks. Name both variables.

Independent / Dependent _____

4. **Sunflower.** Kenji graphs the height of his sunflower each week.



a. Name the independent variable. _____

b. Name the dependent variable. _____

c. What does the point (4, 20) mean? _____

5. **Find the Error.** The number of people at a picnic changes how many sandwiches are needed. Leah says the sandwiches are independent because that is the bigger number. Explain her mistake.

_____

_____

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

AT HOME Name two things at home that change together. Which one depends on the other?

Name _____ Date _____ Period _____

LESSON 9-1 · HOMEWORK PACKET · SHEET 2 OF 2

Tables of Values

Maryland Standard 6.EE.C.9 · Learning target – I can build a table of values for a relationship between two variables.

REMEMBER

- A **table of values** pairs each input (x) with its output (y).
- Use the **rule** on every input. With a fee, **multiply first**, then add.

WORKED EXAMPLE

A copier prints 20 pages each minute. Make a table for 1, 2, and 4 minutes.

Step 1 Minutes is x. Pages is y. The rule is $y = 20x$.

Step 2 $20 \times 1 = 20$, $20 \times 2 = 40$, $20 \times 4 = 80$

Answer **20, 40, and 80 pages**

PRACTICE

show your work · label units

1. Use the rule $y = x + 8$ to complete the table.

x	0	2	4	7
y				

2. **Skate Rental.** A rink charges \$5 to get in plus \$3 for each hour of skating. Complete the table.

Hours (x)	1	2	3	6
Cost in \$ (y)				

3. **Marker Boxes.** The table shows markers in boxes. Describe the rule. Then fill in the missing values.

Boxes (x)	1	2	3	4	8
Markers (y)	8	16	24		

Rule _____

4. **Find the Error.** Marcus made a table for $y = 2x + 1$. He wrote x: 1, 2, 3, 4 and y: 3, 5, 7, 8. Which y value is wrong? What should it be?

Answer _____

5. **Stretch.** A taxi charges \$4 plus \$2 for each mile. Complete the table. How many miles cost \$20?

Miles (x)	1	3	5	
Cost in \$ (y)				20

TEST PRACTICE

choose the best answer

6. A rule is "multiply by 4, then add 5." What is y when $x = 6$?

A 24 **B** 44 **C** 29 **D** 15

7. A table has x-values 1, 2, and 3. Which y-values match the rule $y = x + 6$?

A 6, 12, 18 **B** 7, 8, 9 **C** 7, 14, 21 **D** 6, 7, 8

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

LESSON 9-2 · HOMEWORK PACKET · SHEET 1 OF 2

From Table to Graph

Maryland Standard 6.EE.C.9 · Learning target – I can turn a table of values into points and plot them on a graph.

REMEMBER

- Each row of a table becomes an **ordered pair** (x, y).
- To plot (x, y), start at (0, 0). Move **right** x, then **up** y.
- Points from a constant rate line up in a **straight line**.

WORKED EXAMPLE

Movie tickets cost $8 each. Write ordered pairs for 1, 2, and 3 tickets.

Step 1 Tickets is x. Cost is y. Multiply each x by 8.

Step 2 $8 \times 1 = 8$, $8 \times 2 = 16$, $8 \times 3 = 24$

Answer (1, 8), (2, 16), (3, 24)

PRACTICE

show your work · label units

1. Write each table row as an ordered pair (x, y).

a. $x = 4, y = 12$ _____

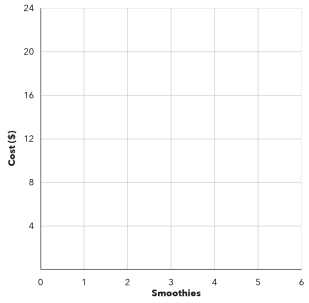
b. $x = 0, y = 0$ _____

c. $x = 6, y = 30$ _____

d. $x = 9, y = 2$ _____

2. Smoothies. Smoothies cost $4 each. Complete the table. Then plot the points on the grid and connect them.

Smoothies (x)	1	2	3	5
Cost in $ (y)				

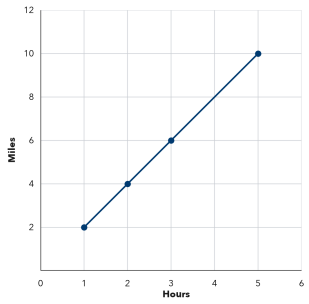


3. Hiking. The graph shows how far Kofi hikes.

a. Write the ordered pair for 5 hours. _____

b. What does (3, 6) mean? _____

c. Miles per hour: _____



4. Bike Rental. A bike rents for $6 per hour. Write the ordered pairs (hours, cost) for renting 1, 3, and 4 hours. Then tell what (0, 0) means.

Ordered pairs _____

5. Find the Error. Teo's table shows x (hours): 2, 4 and y (dollars): 10, 20. He plotted (10, 2) and (20, 4). Explain his mistake. Which points should he plot?

_____

_____

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

AT HOME Show someone at home how to plot (3, 5): right 3, then up 5.

Name _____ Date _____ Period _____

LESSON 9-2 · HOMEWORK PACKET · SHEET 2 OF 2

Analyzing a Graph

Maryland Standard 6.EE.C.9 · Learning target – I can read a relationship off a graph and describe the rate it shows.

REMEMBER

- For a line through (0, 0), the **unit rate** is $y \div x$. The point (3, 12) means 3 of x go with 12 of y.
- With the same scales, a **steeper** line has a greater rate.

WORKED EXAMPLE

A line through (0, 0) passes through (2, 10). Find the unit rate and y when $x = 7$.

Step 1 Unit rate: $10 \div 2 = 5$

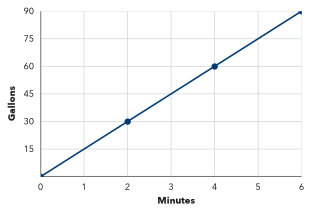
Step 2 $y = 5 \times 7 = 35$

Answer **5 per unit; $y = 35$**

PRACTICE

show your work · label units

1. **Filling a Pool.** The graph shows the water in a pool.



a. What does (4, 60) mean? _____

b. Gallons per minute: _____

c. Gallons after 9 minutes: _____

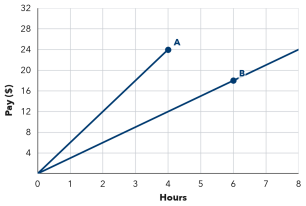
2. Each line passes through (0, 0) and the given point. Find the unit rate.

a. (3, 21) _____ **b.** (5, 40) _____ **c.** (8, 96) _____

3. **Reading.** A line through (0, 0) shows that Ana reads 18 pages in 3 hours. Find her unit rate. How many pages does she read in 7 hours?

Answer _____

4. **Two Jobs.** The graph shows pay for two jobs. Find each pay rate. Which line is steeper, and what does it mean?



Answer _____

5. **Savings.** Jada's savings graph passes through (0, 10), (1, 15), and (2, 20). She says it is proportional. Is she right? What does (0, 10) mean?

_____

_____

TEST PRACTICE

choose the best answer

6. A line through the origin passes through (5, 35). What is the unit rate?

A 5 **B** 30 **C** 7 **D** 175

7. Line P passes through (1, 4). Line Q passes through (1, 9). Both start at (0, 0). Which is true?

A P is steeper. **B** Q is steeper; greater rate.

C They have the same rate. **D** Q is steeper; smaller rate.

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

LESSON 9-3 · HOMEWORK PACKET · SHEET 1 OF 2

Equations from Tables

Maryland Standard 6.EE.C.9 · Learning target – I can write an equation that matches a table of values.

REMEMBER

- An **equation** like $y = 5x$ is a rule that works for **every** row.
- Same $y \div x$ in every row: y = (that number) × x. Same $y - x$: $y = x$ + (that number).
- Check your equation with **two** rows.

WORKED EXAMPLE

Write an equation for x: 2, 3, 5 and y: 12, 18, 30.

Step 1 $12 \div 2 = 6$, $18 \div 3 = 6$, $30 \div 5 = 6$

Step 2 Check: $6 \times 5 = 30$

Answer $y = 6x$

PRACTICE

show your work · label units

1. Write an equation for each table.

a. x: 1, 2, 3 y: 7, 14, 21 $y =$ _____

b. x: 1, 2, 3 y: 10, 11, 12 $y =$ _____

c. x: 2, 4, 6 y: 10, 20, 30 $y =$ _____

d. x: 5, 6, 7 y: 2, 3, 4 $y =$ _____

e. x: 0, 4, 8 y: 6, 10, 14 $y =$ _____

f. x: 1, 3, 5 y: 9, 27, 45 $y =$ _____

g. x: 2, 3, 4 y: 16, 24, 32 $y =$ _____

h. x: 10, 12, 14 y: 5, 7, 9 $y =$ _____

2. Write the equation. Then complete the table.

x	2	3	4	6	9
y	22	33	44		

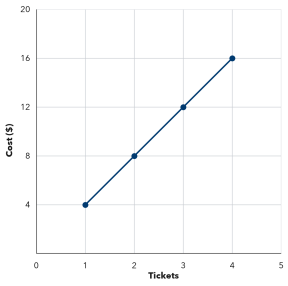
Equation _____

3. **Stretch.** A table shows x: 2, 5, 9 and y: 0, 3, 7. Write an equation. Then find y when $x = 20$.

Answer _____

4. **Tickets.** The graph shows the cost of fair tickets. Write an equation for the graph. Then find the cost of 10 tickets.

Answer _____



5. **Find the Error.** For x: 2, 4, 6 and y: 6, 8, 10, Owen wrote $y = 3x$ because $3 \times 2 = 6$. Explain his mistake and write the correct equation.

_____

_____

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

AT HOME Make a 3-row table for a rule. Ask someone at home to find your equation.

Name _____ Date _____ Period _____

LESSON 9-3 · HOMEWORK PACKET · SHEET 2 OF 2

Equations from Situations

Maryland Standard 6.EE.C.9 · Learning target – I can write an equation from a described situation and identify its variables.

REMEMBER

- A **rate** ("each," "per") multiplies x. A **starting amount** or fee is added once.
- y = (rate) × x + (starting amount). Check it with one value from the story.

WORKED EXAMPLE

A gym charges \$10 to enter plus \$7 per hour. Write an equation for the cost y of x hours.

Step 1 Rate: 7 per hour, so $7x$. Fee: add 10.

Step 2 Check 3 hours: 7 × 3 + 10 = 31

Answer $y = 7x + 10$

PRACTICE

show your work · label units

1. Write an equation for each situation.

a. Each pack holds 12 pencils. Pencils y in x packs. $y =$ _____

b. Jamal is 3 years older than his sister. Jamal's age y when she is x. $y =$ _____

c. A club costs \$20 to join plus \$15 a month. Cost y for x months. $y =$ _____

2. **Bowling.** Shoes cost \$4, plus \$5 per game. Write an equation for the cost y of x games. Find the cost of 4 games.

Answer _____

3. **Taxi.** A taxi charges \$3 to start plus \$2 per mile. Write an equation for the cost y of x miles. Find the cost of 7 miles.

Answer _____

4. **Car Wash.** A class has \$30 and earns \$8 per car washed. Complete the table. Write an equation.

Cars (x)	0	1	2	5
Total \$ (y)				

Equation _____

5. **Find the Error.** For "a \$25 fee plus \$10 an hour," Nia wrote $y = 35x$. Explain her mistake and fix it.

_____

_____

TEST PRACTICE

choose the best answer

6. A plumber charges a \$40 fee plus \$25 per hour. Which equation gives the cost c for h hours?

A $c = 40h + 25$ **B** $c = 25h + 40$ **C** $c = 65h$ **D** $c = 25h$

7. Which situation matches $y = 3x + 12$?

A 3 cans per box, 12 boxes

B Start with \$3, earn \$12 per hour

C Start with 12 gal, add 3 gal per min

D \$12 for 3 people

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

Name _____ Date _____ Period _____

LESSON 9-4 · HOMEWORK PACKET · SHEET 1 OF 2

Substitute and Solve

Maryland Standard 6.EE.C.9 · Learning target – I can substitute a value into an equation to find the matching output.

REMEMBER

- To find the output, **substitute** the input for x.
- Then use **order of operations**: multiply first, then add or subtract.

WORKED EXAMPLE

Use $y = 6x + 4$ to find y when $x = 5$.

Step 1 Substitute: $y = 6 \times 5 + 4$

Step 2 Multiply, then add: $30 + 4 = 34$

Answer **$y = 34$, so (5, 34)**

PRACTICE

show your work · label units

1. Substitute to find y.

a. $y = 4x + 7$, $x = 3$ _____

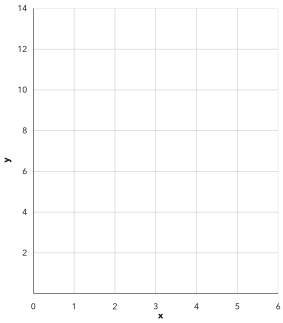
b. $y = 9x$, $x = 8$ _____

c. $y = 3x - 2$, $x = 10$ _____

d. $y = x + 15$, $x = 27$ _____

2. Complete the table for $y = 2x + 3$. Then plot the points and connect them.

x	0	1	2	4	5
y					



3. **Water Tank.** A tank has 20 gallons. It fills at 15 gallons each minute, so $g = 15m + 20$.

a. Gallons after 6 minutes: _____ gal

b. Gallons after 10 minutes: _____ gal

4. **Bike Rental.** A bike rental costs $c = 7h + 5$ dollars for h hours. Find the cost of renting for 3 hours. Then find the cost for 8 hours.

Costs _____

5. **On the Line?** Substitute x to decide whether each point is on the graph of $y = 5x + 2$.

a. (4, 22): $5 \times 4 + 2 =$ ____ On the line? ☐ Yes ☐ No

b. (6, 30): $5 \times 6 + 2 =$ ____ On the line? ☐ Yes ☐ No

6. **Find the Error.** For $y = 4x + 3$ with $x = 5$, Dev added first: $4 + 3 = 7$, and $7 \times 5 = 35$. Explain his mistake and find y.

_____

_____

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____

AT HOME Pick a rule like $y = 2x + 1$. Ask someone at home for an input and find the output together.

Name _____ Date _____ Period _____

LESSON 9-4 · HOMEWORK PACKET · SHEET 2 OF 2

Working Backward to a Goal

Maryland Standard 6.EE.C.9 · Learning target – I can work backward from a goal to find the input an equation needs.

REMEMBER

- Know the goal (y)? Substitute it, then solve for x.
- Undo in **reverse order**: subtract the fee first, then divide by the rate.
- In a counting problem, a decimal answer may need to be **rounded up**.

WORKED EXAMPLE

A rental costs $y = 4x + 10$ for x hours. How many hours cost \$46?

Step 1 Subtract 10: $46 - 10 = 36$

Step 2 Divide by 4: $36 \div 4 = 9$

Answer **9 hours**

PRACTICE

show your work · label units

1. Solve for x.

a. $7x = 63$ _____

b. $8x = 104$ _____

c. $3x + 5 = 32$ _____

d. $6x + 12 = 60$ _____

2. **Trip Fund.** A class has \$45 and earns \$15 a week: $y = 15x + 45$. How many weeks until it has \$210?

Answer _____ weeks

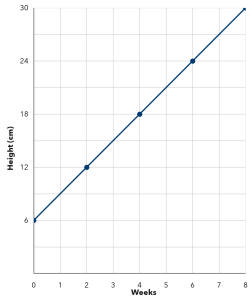
3. **Gift Fund.** A club has \$30 in its gift fund. Members add \$12 each week, so $y = 12x + 30$. How many weeks until the fund has \$150?

Answer _____ weeks

4. **Plant Growth.** A plant is 6 cm tall and grows 3 cm a week: $h = 3w + 6$.

a. Use the graph. When is it 18 cm? _____

b. Use the equation. When is it 33 cm? _____



5. **Round Up.** A box holds 12 cookies. Ana needs 150 cookies, so she says 12.5 boxes. How many boxes should she buy? Explain.

_____

_____

TEST PRACTICE

choose the best answer

6. A rental costs $y = 8x + 12$ dollars for x hours. Max has \$60. How many hours can he rent?

A 5 hours **B** 6 hours **C** 7.5 hours **D** 9 hours

7. Mia solved $5x + 20 = 85$ by dividing 85 by 5 first. What is the correct value of x?

A $x = 17$ **B** $x = 21$ **C** $x = 13$ **D** $x = 65$

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #____