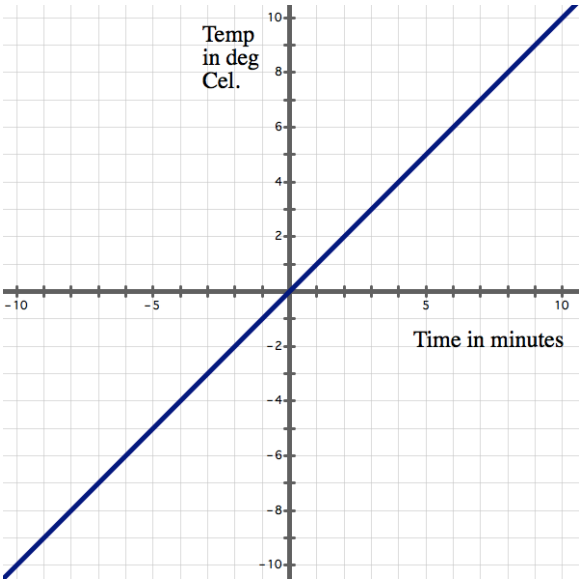
Algebra 1 CH 3 **WKST 1** Name_____

Notes:

Type 1a: Use the graph to answer the questions

Situation: A frozen dinner is taken out of a freezer and the temp is tracked each minute.



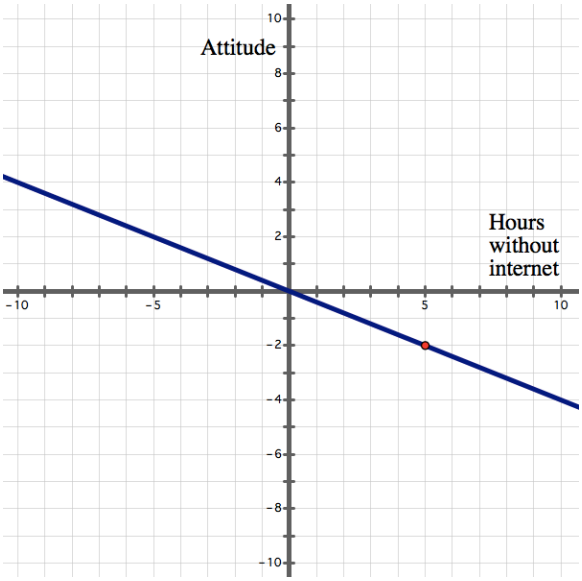
1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. What is the temp after 4 minutes?
5. How many minutes until temp reaches 8°C?
6. Write an equation using t and m.
7. Is the graph a function? How do you know?
8. Write a function named t(m)
9. What is the value of t(2) and describe its meaning.

10. Complete the table below:

X	Y
Units:	Units:
-2	
-1	
0	
1	
2	
	9

Type 1b: Use the graph to answer the questions

Situation: The attitude of teens is tracked during an outage in internet access.



1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. How has attitude changed after 2 hours?
5. How many hours until attitude reaches -3?
6. Write an equation using a and h.
7. Is the graph a function? How do you know?
8. Write a function named a(h)
9. What is the value of a(2) and describe its meaning.

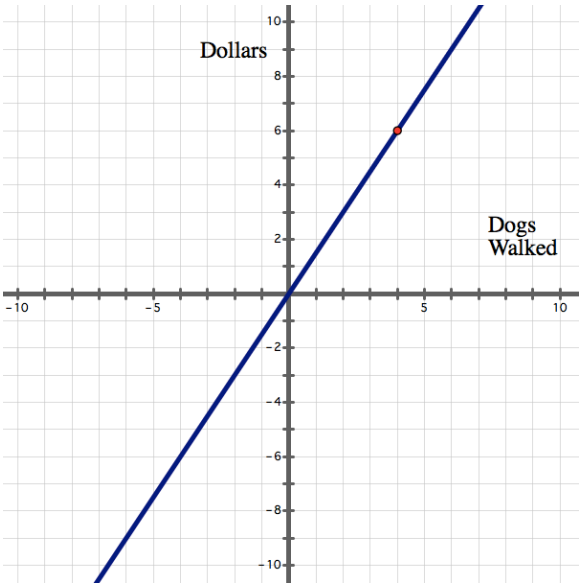
10. Complete the table below:

X	Y
Units:	Units:
-2	
-1	
0	
1	
2	
	3

11. Describe the domain and range

Type 1c: Use the graph to answer the questions

Situation: Sam walks dogs to make money.



1. Is the graph linear? How do you know?

2. Find the slope.

3. Describe the meaning of the slope.

4. What is the income after walking 4 dogs?

5. How many dogs must be walked to earn $10?

6. Write an equation using D for dollars and d for dogs.

7. Is the graph a function? How do you know?

8. Write a function named D(d)

9. What is the value of D(4) and describe its meaning.

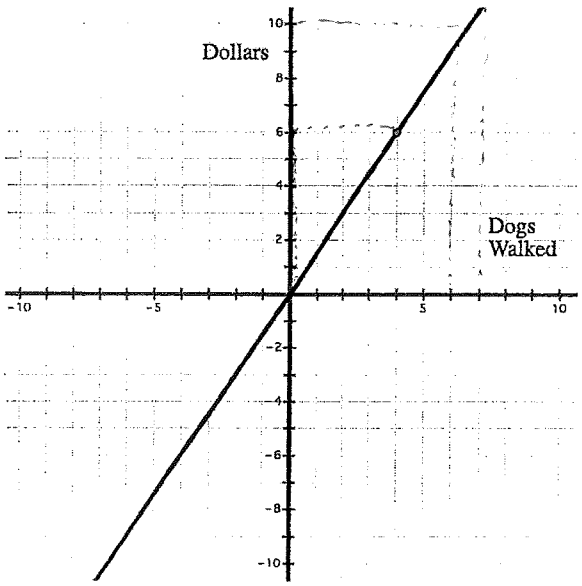
10. Complete the table below:

X	Y
Units:	Units:
0	
1	
2	
3	
5	
	9

11. Describe the domain and range

Type 1c: Use the graph to answer the questions

Situation: Sam walks dogs to make money.



1. Is the graph linear? How do you know?
   yes - straight
2. Find the slope.
   $\frac{6 \text{ dollars}}{4 \text{ dogs}} = \frac{3}{2}$ dol/dog or $1.5/dog
3. Describe the meaning of the slope.
   As dog inc 1, dollars inc 1.50
4. What is the income after walking 4 dogs?
   $6
5. How many dogs must be walked to earn $10?
   7 dogs
6. Write an equation using D for dollars and d for dogs. y = mx
   D = 1.5d
7. Is the graph a function? How do you know?
   Yes - each input maps to 1 output
8. Write a function named D(d)
   D(d) = 1.5d
9. What is the value of D(4) and describe its meaning.
   D(4) = 1.5(4) = $6 D(4) = 6
10. Complete the table below:

X	Y
Units: dogs - d	Units: dollars (D)
0	0
1	1.5
2	3
3	4.5
5	7.5
6	9

input output

D = 1.5d 1.5(5)

9 = 1.5d

divide by 1.5

6 = d

11. Describe the domain and range
    Domain: pos. integers
    Range: pos. Reals to the nearest cent.

Type 2c: Use the table to answer the questions

X weeks	0	1	2	3	4	5
Y quizzes	0	2	4	6	8	10

1. Is the pattern linear? How do you know?

2. Find the slope.

3. Describe the meaning of the slope.

4. How many quizzes have been taken after 4 weeks?

5. How many weeks will pass before 6 quizzes are taken?

6. Write an equation using w and q.

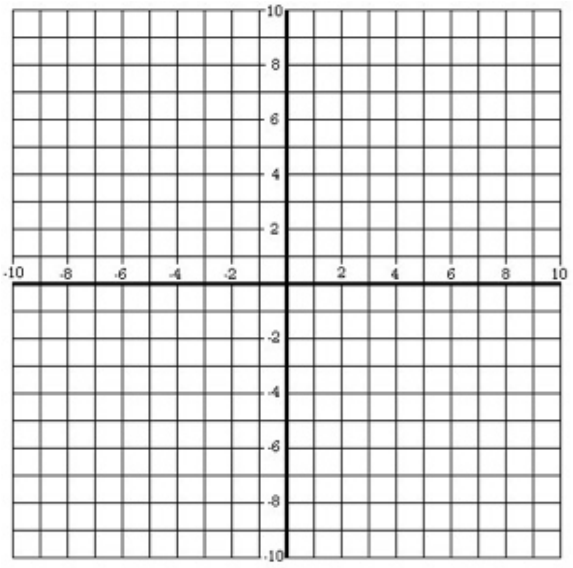
7. Is the pattern a function? How do you know?

8. Write a function named q(w)

9. What is the value of q(2) and describe its meaning.

10. Describe the domain and range.

11. Graph the relationship



Type 2c: Use the table to answer the questions

ΔX		+1	+1	+1	+1	+1
X weeks	0	1	2	3	4	5
Y quizzes	0	2	4	6	8	10
ΔY		+2	+2	+2	+2	+2

1. Is the pattern linear? How do you know?

   Yes- constant rate of change

2. Find the slope.

   $m = \frac{\Delta Y}{\Delta X} = \frac{2 \text{ quizzes}}{1 \text{ week}} = 2 \text{ quizzes per week.}$

3. Describe the meaning of the slope.

   As weeks inc 1, quizzes inc. 2

4. How many quizzes have been taken after 4 weeks?

   8 quizzes

5. How many weeks will pass before 6 quizzes are taken?

   3 weeks

6. Write an equation using w and q. $y = mx$

   $q = 2w$

7. Is the pattern a function? How do you know?

   Yes: each input maps to one output

8. Write a function named q(w) $q(w) = 2w$

9. What is the value of q(2) and describe its meaning. $q(2) = 4$

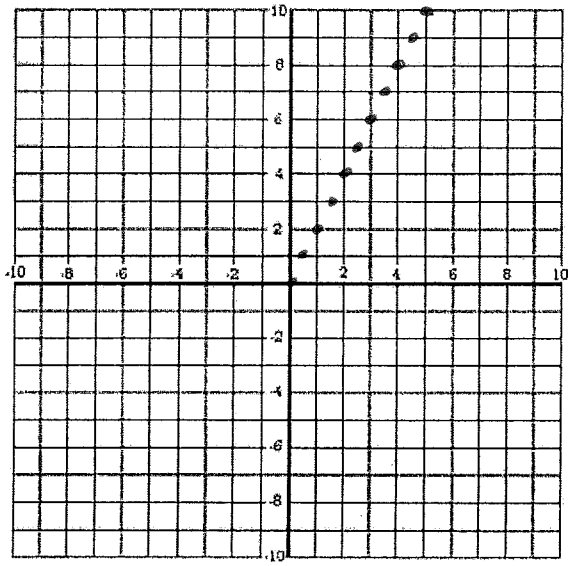
   $q(2) = 2(2) = 4$ 2 weeks = 4 quizzes.

10. Describe the domain and range.

    D: pos. Reals

    R: pos. integers

11. Graph the relationship



Type 2d: Use the table to answer the questions

X minutes	0	1	2	3	4	5
Y coughs	0	3	6	9	12	15

1. Is the pattern linear? How do you know?

2. Find the slope.

3. Describe the meaning of the slope.

4. How many coughs have occurred after 4 minutes?

5. How many minutes will pass before 15 coughs occur?

6. Write an equation using m and c.

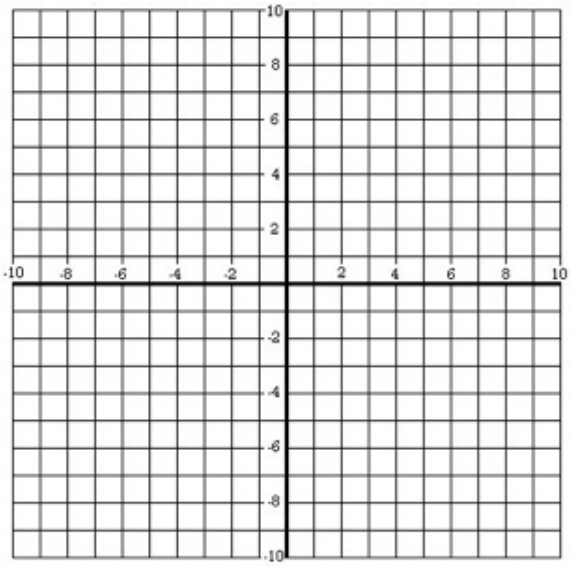
7. Is the pattern a function? How do you know?

8. Write a function named q(w)

9. What is the value of q(2) and describe its meaning.

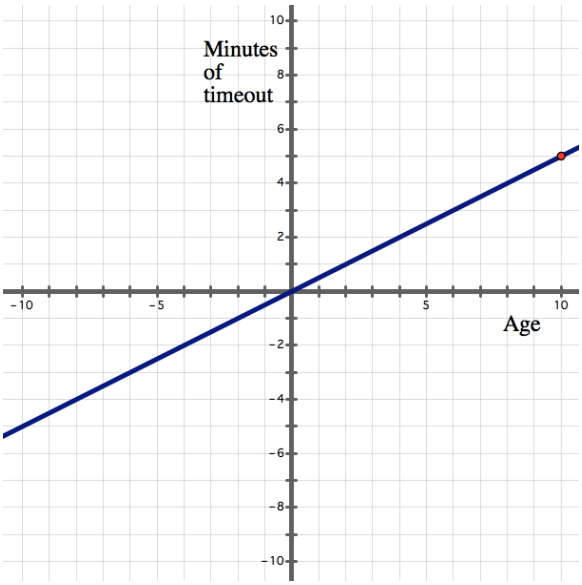
10. Describe the domain and range.

11. Graph the relationship



Type 1d: Use the graph to answer the questions

Situation: A child psychologist uses the following chart to recommend how long kids should be placed in time-out based on their age.



1. Is the graph linear? How do you know?

2. Find the slope.

3. Describe the meaning of the slope.

4. What is the time-out for a 5 year old?

5. What age receives 5 min. of time-out?

6. Write an equation using a and m.

7. Is the graph a function? How do you know?

8. Write a function named m(a)

9. What is the value of m(4) and describe its meaning.

10. Complete the table below:

X	Y
Units:	Units:
0	
2	
4	
6	
8	
	9

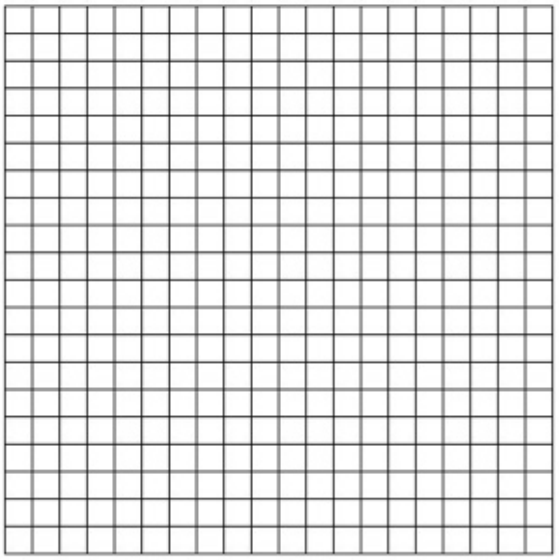
11. Describe the domain and range

Type 3c: Use the situation to answer the questions

Jenny's babysitting job pays her by the hour using the equation p = 6h where p is the payment and h is the hours.

1. Complete a table for the situation on domain $0 \leq h \leq 5$

X	Y



2. Graph the situation on the given domain
3. Describe the range.

4. Rewrite the equation as a function. Give a sample input/output and describe the meaning.

5. Find the output when the input is 3

6. Find the input when the output is 18

7. Is the pattern linear? Is the pattern a function?

Type 3c: Use the situation to answer the questions Name _____

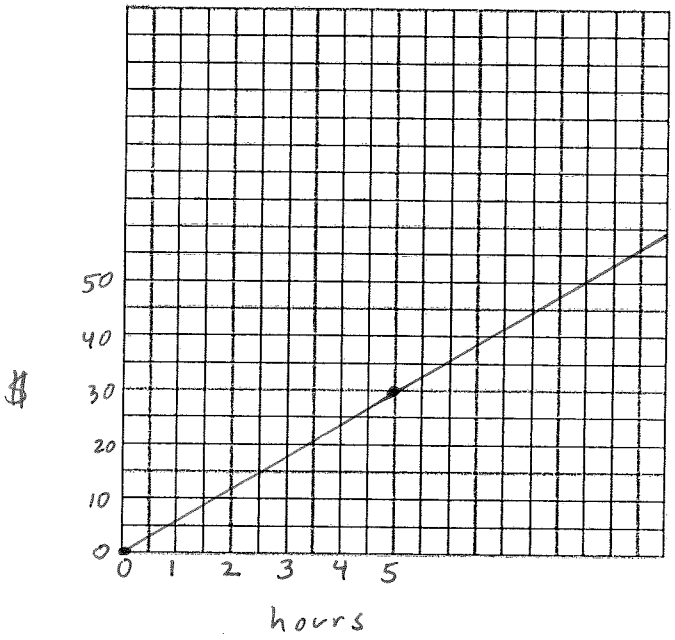
pay hours

Jenny's babysitting job pays her by the hour using the equation p = 6h where p is the payment and h is the hours.

1. Complete a table for the situation on domain $0 \le h \le 5$ (Reals)

X hours	Y pay $
0	0
1	6
2	12
3	18
4	24
5	30

domain



2. Graph the situation on the given domain

3. Describe the range.

pos. reals

4. Rewrite the equation as a function. Give a sample input/output and describe the meaning.

$p(h) = 6h$ $p(3) = 18$

3 hours = $18

5. Find the output when the input is 3

$18

6. Find the input when the output is 18

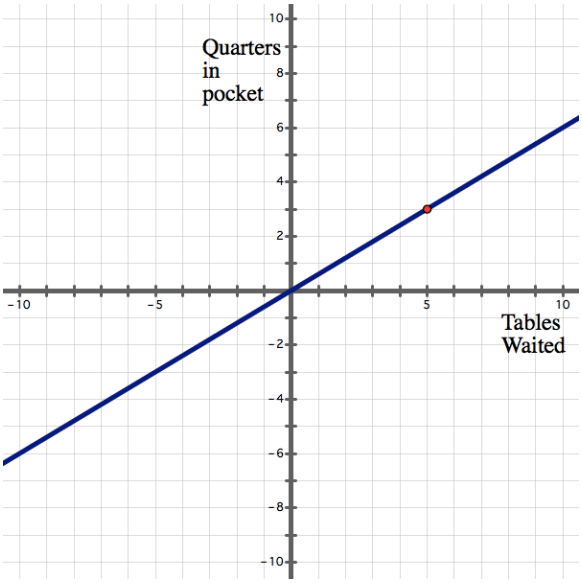
3 hours

7. Is the pattern linear? Is the pattern a function?

yes - table has constant rate of change
graph is straight
equation is in a linear form: $y = mx$

Type 1e: Use the graph to answer the questions

Situation: A waiter tracks the number of quarters in his pocket after waiting on tables.



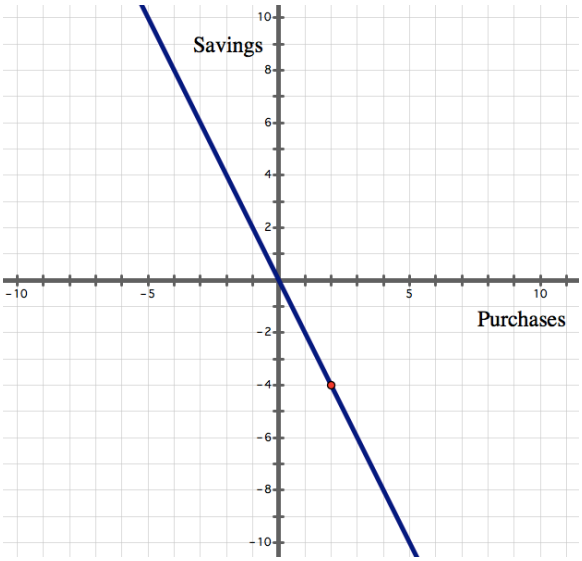
1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. How many quarters after 1 table?
5. How many tables until he has 6 quarters?
6. Write an equation using q and t.
7. Is the graph a function? How do you know?
8. Write a function named q(t)
9. What is the value of q(4) and describe its meaning.
10. Complete the table below:

X	Y
Units:	Units:
0	
3	
6	
9	
12	
	6

Describe the domain and range

Type 1f: Use the graph to answer the questions

Situation: Jen buys items online and tracks how the number of purchases affects the money in her savings account. On the y-axis, 1 = $100



1. Is the graph linear? How do you know?

2. Find the slope.

3. Describe the meaning of the slope.

4. What is the change to the savings after 3 purchases?

5. How many purchases until savings goes down $600?

6. Write an equation using s and p.

7. Is the graph a function? How do you know?

8. Write a function named s(p)

9. What is the value of s(6) and describe its meaning.

10. Complete the table below:

X	Y
Units:	Units:
-1	
1	
3	
5	
7	
	-$800

11. Describe the domain and range

Type 2e: Use the table to answer the questions

X absences	0	1	2	3	4	5
Y school performance	0	-1	-2	-3	-4	-5

1. Is the pattern linear? How do you know?

2. Find the slope.

3. Describe the meaning of the slope.

4. What is the school performance after 3 absences?

5. How many absences will result in performance of -5?

6. Write an equation using a and p.

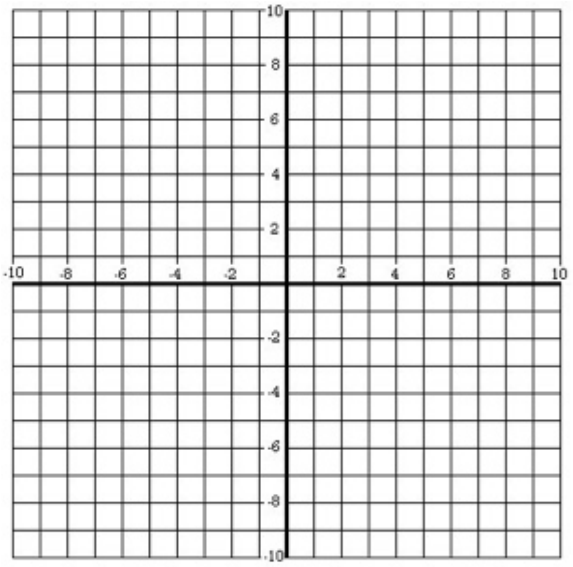
7. Is the pattern a function? How do you know?

8. Write a function named p(a)

9. What is the value of p(2) and describe its meaning.

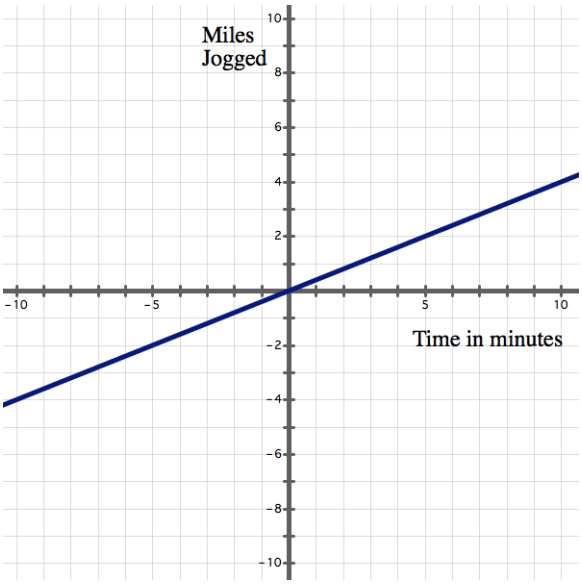
10. Describe the domain and range.

11. Graph the relationship



Type 1g: Use the graph to answer the questions

Situation: Sally tracks her miles jogged over time.



1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. What is the distance jogged after 4 minutes?
5. How many minutes until 4 miles are jogged?
6. Write an equation using j and t.
7. Is the graph a function? How do you know?
8. Write a function named j(t)
9. What is the value of j(2) and describe its meaning.

10. Complete the table below:

X	Y
Units:	Units:
0	
3	
6	
9	
12	
	9

11. Describe the domain and range

Type 2f: Use the table to answer the questions

X seconds	0	1	2	3	4	5
Y_1 height (ft)	0	4	6	6	4	0
Y_2 velocity (ft/sec)	5	3	1	-1	-3	-5

1. Is the pattern for Y_1 linear based on seconds? Is the pattern for Y_2 linear based on seconds? How do you know?

2. Find the slope for Y_1 based on seconds

3. Describe the meaning of the slope.

4. State the height and velocity of the object at 4 seconds?

5. State the time and height of the object when the velocity is -1 fps.

6. Write an equation for Y_1 based on seconds using h and s.

7. Is the pattern for Y_1 based on x a function? Is the pattern for Y_2 based on x a function? How do you know?

8. Write a function named h(s)for Y_1 based on x.

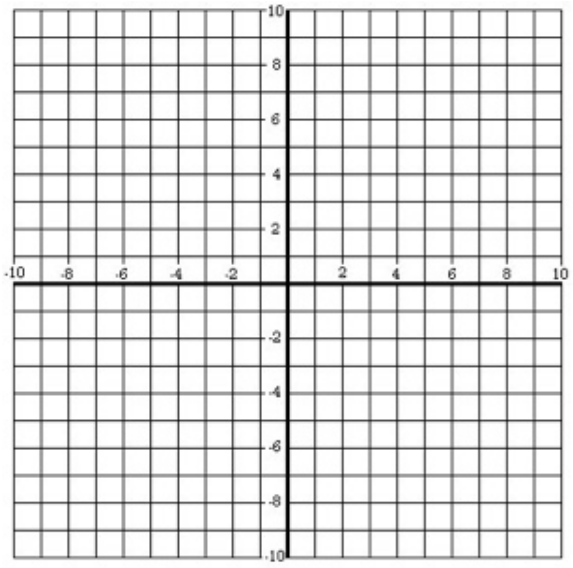
9. What is the value of h(2) and describe its meaning.

10. Describe the domain.

11. Describe the range of Y_1.

12. Describe the range of Y_2.

13. Graph the relationship



Type 2f: Use the table to answer the questions

X seconds	0	1	2	3	4	5
Y_1 height (ft)	0	4	6	6	4	0
Y_2 velocity (ft/sec)	5	3	1	-1	-3	-5

1. Is the pattern for Y_1 linear based on seconds? Is the pattern for Y_2 linear based on seconds? How do you know?

	Δx	+1	+1	+1	
x	0	1	2	3	Not Linear
Y_1	0	4	6	6	
	Δy	+4	+2	+0	

	Δx	+1	+1	+1	
x	0	1	2	3	Linear constant rate of change
y	5	3	1	-1	
		-2	-2	-2	

* 2. Find the slope for Y_2 based on seconds

$$m = \frac{\Delta y}{\Delta x} = \frac{-2 ft/sec}{1 sec} = -2 ft/sec/sec$$

3. Describe the meaning of the slope.

As seconds inc 1, velocity decreases 2 ft/sec (slows)

4. State the height and velocity of the object at 4 seconds?

height = Y_1 = 4 ft velocity = Y_2 = -3 ft/sec

5. State the time and height of the object when the velocity is -1 fps.

x = 3 sec 6 ft

* 6. Write an equation for Y_2 based on seconds using v and s. $y = mx$, $v = -2s$

7. Is the pattern for Y_1 based on x a function? Is the pattern for Y_2 based on x a function? How do you know?

Both are functions (1x → 1y)

* 8. Write a function named v(s) for Y_1 based on x. $v(s) = -2s$

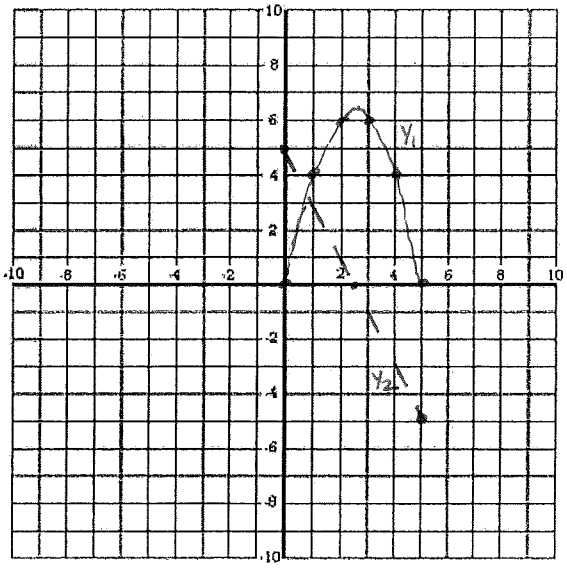
* 9. What is the value of v(2) and describe its meaning. $v(2) = -2(2) = -4$

2 sec = -4 ft/sec

10. Describe the domain. Reals between 0 & 5

11. Describe the range of Y_1. Reals between 0 & 6

12. Describe the range of Y_2. Reals between -5 & 5

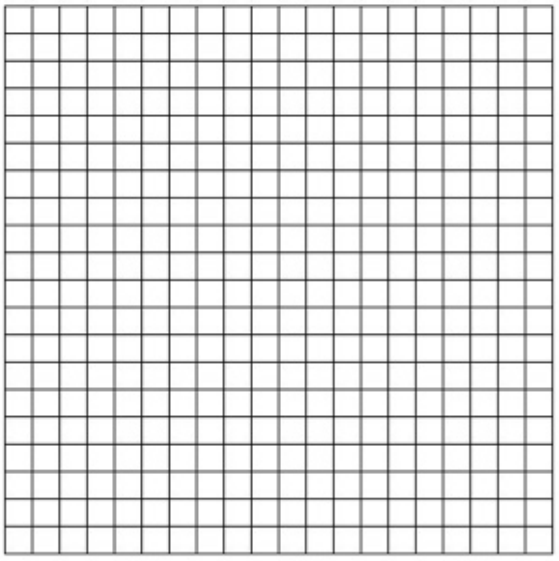


* 13. Graph the relationships

Solid = height
dashed = velocity

Type 2g: Use the table to answer the questions

X Students	Y Detentions
0	0
5	2
10	4
15	6
20	8
25	10
30	12



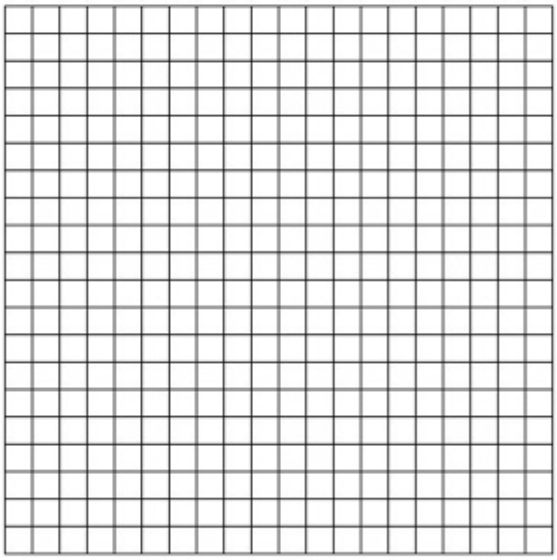
1. Graph the relationship
2. Is the pattern linear? How do you know?
3. Find the slope.
4. Describe the meaning of the slope.
5. How many detentions are given if 20 students are in the class?
6. How many students are in the class if 6 detentions occur?
7. Write an equation using s and d.
8. Is the pattern a function? How do you know?
9. Write a function named d(s)
10. What is the value of d(2) and describe its meaning.
11. Describe the domain and range.

Type 3d: Use the situation to answer the questions

Bill washes cars for money and is paid using the function I(c) = 3c where I is the income and c is the cars washed.

1. Complete a table for the situation on domain $0 \leq c \leq 6$

X	Y



2. Graph the situation on the given domain
3. Describe the range.

4. Rewrite the function as an equation. Give a sample input/output and describe the meaning.

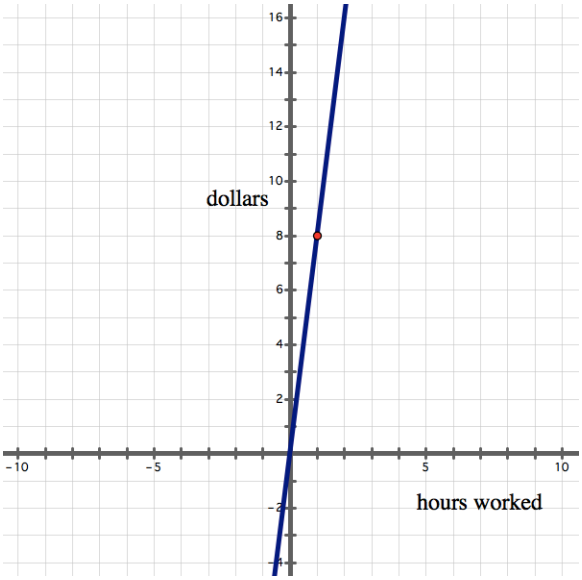
5. Find the output when the input is 4

6. Find the input when the output is 15

7. Is the pattern linear? Is the pattern a function?

Type 1h: Use the graph to answer the questions

Situation: The graph shows the dollars earned at a job based on the hours worked.



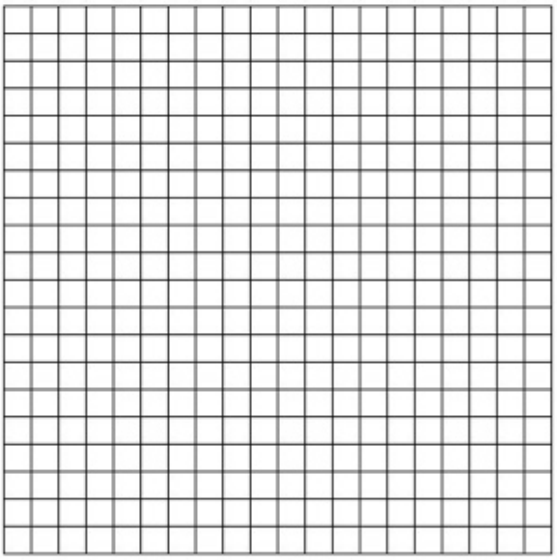
1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. What is the dollars earned after 3 hours?
5. How many hours until $10 is earned?
6. Write an equation using d and w.
7. Is the graph a function? How do you know?
8. Write a function named d(w)
9. What is the value of d(8) and describe its meaning.
10. Complete the table below:

X	Y
Units:	Units:
0	
5	
10	
15	
20	
	$100

11. Describe the domain and range

Type 2h: Use the table to answer the questions

X Wind speed Mph	Y Drop in temp (feels like) °F
0	0
5	-3
10	-6
15	-9
20	-12
25	-15
30	-18



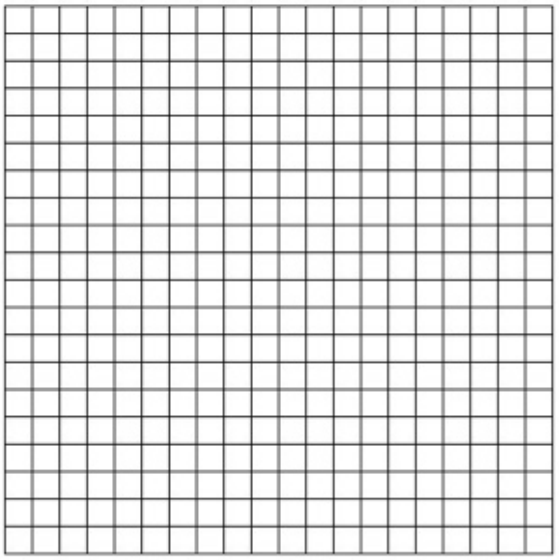
1. Graph the relationship
2. Is the pattern linear? How do you know?
3. Find the slope.
4. Describe the meaning of the slope.
5. What is the feels like temp when the wind speed is 5 mph?
6. What wind speed is required for the feels like temp to be -15°F?
7. Write an equation using w and t.
8. Is the pattern a function? How do you know?
9. Write a function named t(w)
10. What is the value of t(10) and describe its meaning.
11. Describe the domain and range.

Type 3e: Use the situation to answer the questions

Brittany raises rabbits. Brittany has raised rabbits for 10 years. She is paid $2 per pound for the rabbits. The number of rabbits she has is described by the equation r = 4w where r is the number of rabbits and w is the number of weeks.

1. Complete a table for the situation on domain $0 \leq h \leq 7$

X	Y



2. Graph the situation on the given domain

3. Describe the range.

4. Rewrite the equation as a function. Give a sample input/output and describe the meaning.

5. Find the output when the input is 5

6. Find the input when the output is 12

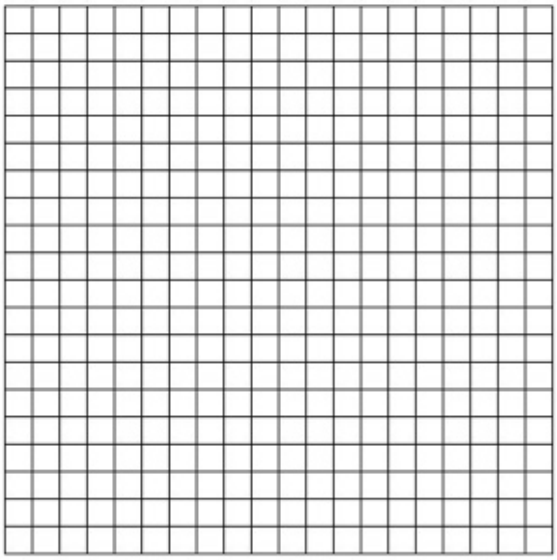
7. Is the pattern linear? Is the pattern a function?

Type 3f: Use the situation to answer the questions

John is a criminal and frequently gets arrested. John is 24 years old. The function $a(c) = \frac{1}{2} c$ describes the number of times John is arrested, a, based on c, the crimes committed.

1. Complete a table for the situation on domain $0 \leq h \leq 6$

X	Y



2. Graph the situation on the given domain
3. Describe the range.

4. Rewrite the function as a function. Give a sample input/output and describe the meaning.

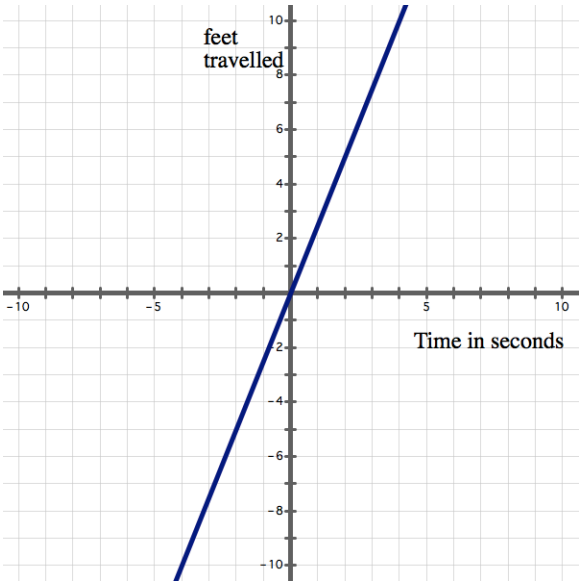
5. Find the output when the input is 6

6. Find the input when the output is 4

7. Is the pattern linear? Is the pattern a function?

Type 1i: Use the graph to answer the questions

Situation: An objected is pushed across an iced over pond. The distance travelled is tracked over time in seconds.



1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. What is the distance after 5 seconds?
5. How many seconds until 4 feet are travelled?
6. Write an equation using f and s.
7. Is the graph a function? How do you know?
8. Write a function named f(s)
9. What is the value of f(20) and describe its meaning.

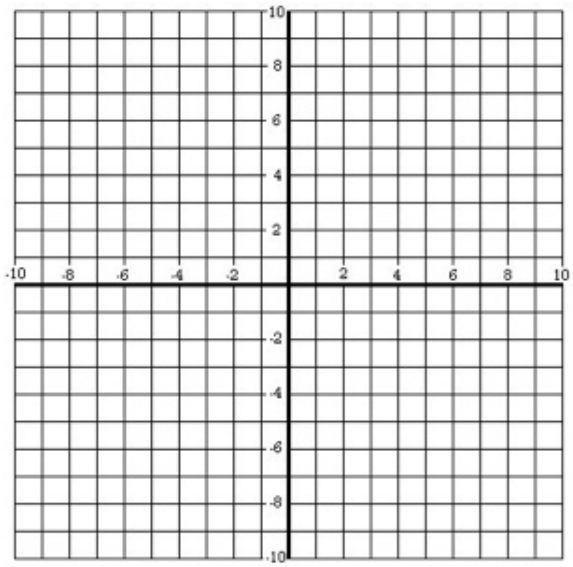
10. Complete the table below:

X	Y
Units:	Units:
0	
2	
4	
6	
8	
	12

11. Describe the domain and range

Type 2i: Use the table to answer the questions

X Candy bought	Y Money in Checking
0	0
2	-1
4	-2
6	-3
8	-4
10	-5
12	-6



1. Graph the relationship
2. Is the pattern linear? How do you know?
3. Find the slope.
4. Describe the meaning of the slope.
5. What is the feels money in checking when the 8 candy bars have been purchased?
6. How many candy bars will result in a checking account value of -6?
7. Write an equation using c and m.
8. Is the pattern a function? How do you know?
9. Write a function named m(c)
10. What is the value of m(6) and describe its meaning.
11. Describe the domain and range.

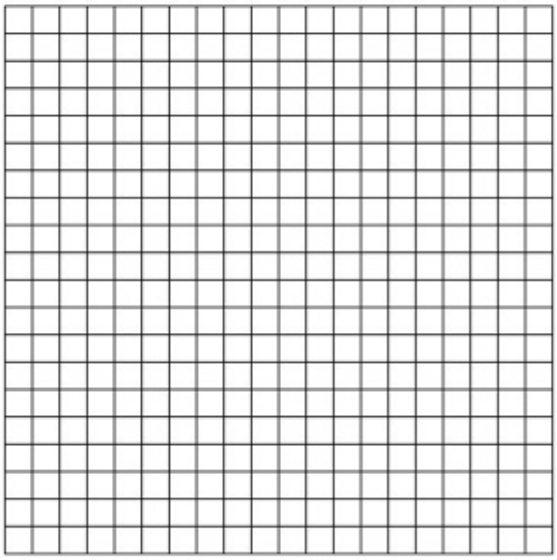
Type 3g: Use the situation to answer the questions

Cassidy has a job mowing lawns and is paid $40 per acre of lawn.

1. Write an equation. Give a sample input/output and describe the meaning.

2. Complete a table for the situation on domain $0 \leq h \leq 6$

X	Y



3. Graph the situation on the given domain

4. Describe the range.

5. Find the output when the input is 3

6. Find the input when the output is $400

7. Is the pattern linear? Is the pattern a function?

Type 3h: Use the situation to answer the questions

Coach Johnson has players run 3 miles every time they miss practice and ½ mile every time they are late to practice.

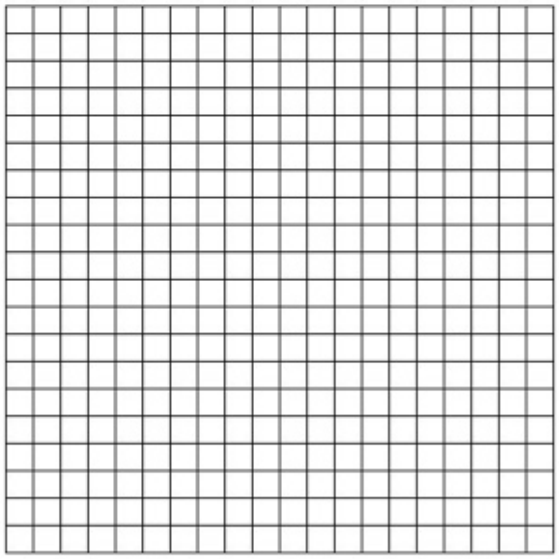
1. Write an equation for miles run based on absences. Give a sample input/output and describe the meaning.

2. Write an equation for miles run based on the frequency they are late. Give a sample input/output and describe the meaning.

3. Complete a table for each situation on domain $0 \leq h \leq 6$

X	Y

X	Y



4. Graph each situation on the given domain

5. Describe the range.

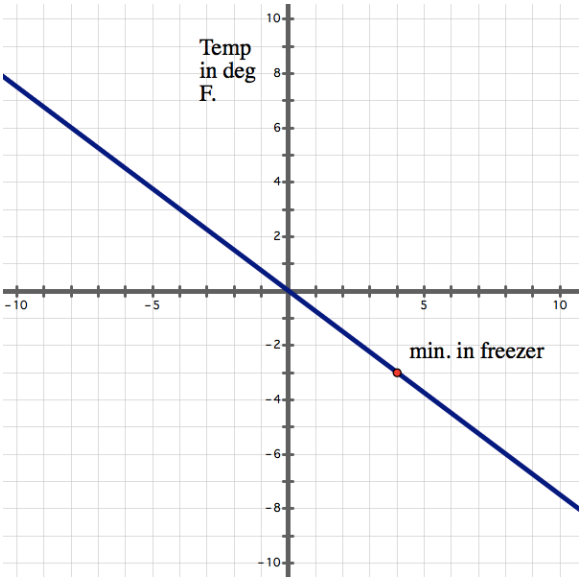
6. Find the output when the input is 3 for each situation.

7. Find the input for each situation when the output is 9 miles of running.

8. Are the patterns linear? Are the patterns a function?

Type 1j: Use the graph to answer the questions

Situation: A frozen dinner is placed in a freezer and the temp is tracked each minute.



1. Is the graph linear? How do you know?
2. Find the slope.
3. Describe the meaning of the slope.
4. What is the temp after 4 minutes?
5. How many minutes until temp reaches -8°C?
6. Write an equation using t and m.
7. Is the graph a function? How do you know?
8. Write a function named t(m)
9. What is the value of t(2) and describe its meaning.

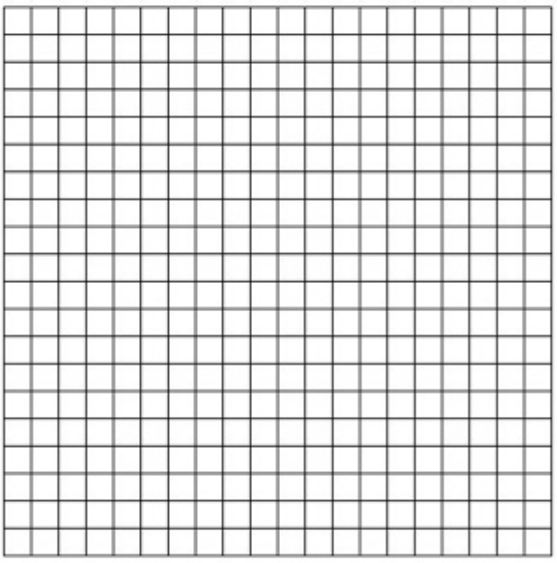
10. Complete the table below:

X	Y
Units:	Units:
-2	
-1	
0	
1	
2	
	9

11. Describe the domain and range

Type 2j: Use the table to answer the questions

X Study hours	Y_1 GPA	Y_2 Class rank
0	2	50
5	2.4	40
10	2.8	32
15	3.2	26
20	3.6	22
25	4	20



1. Graph the Is the pattern for Y_1 and Y_2.

2. Is the pattern for Y_1 linear based on study hours? Is the pattern for Y_2 linear based on study hours? How do you know?

3. Find the slope for Y_1 based on seconds

4. Describe the meaning of the slope.

5. State the GPA and rank if study hours is 10?

6. State the study hours and GPA if class rank reaches 22.

7. Write an equation for Y_1 based on study hours using g and s.

8. Write a function named g(s)for Y_1 based on x.

9. What is the value of g(2) and describe its meaning.

10. Describe the domain.

11. Describe the range of Y_1.

12. Describe the range of Y_2.

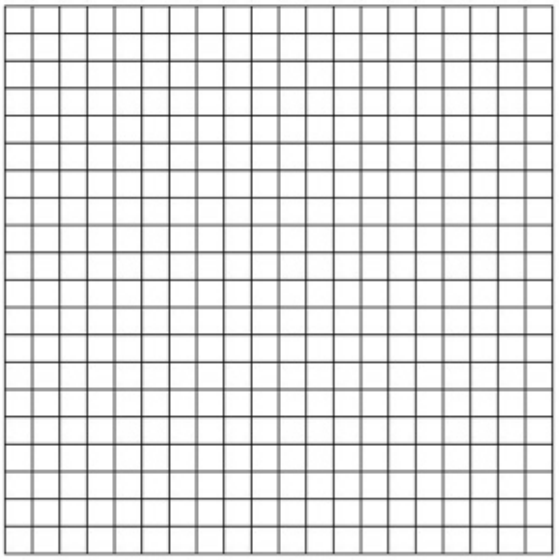
Type 3i: Use the situation to answer the questions

A car is travelling 30 miles every half hour.

1. Write a function. Give a sample input/output and describe the meaning.

2. Complete a table for the situation on domain $0 \leq h \leq 5$

X	Y



3. Graph the situation on the given domain

4. Describe the range.

5. Rewrite the equation as a function. Give a sample input/output and describe the meaning.

6. Find the output when the input is 8 hours

7. Find the input when the output is 180 miles

8. Is the pattern linear? Is the pattern a function?

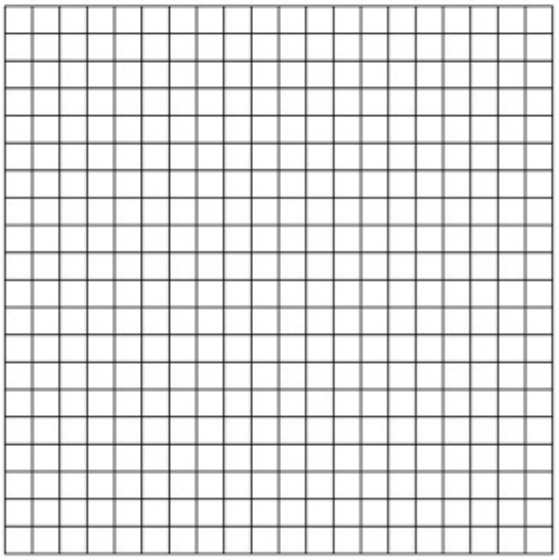
Type 3j: Use the situation to answer the questions

A submarine is descending in the ocean and drops 100 feet below sea level every 4 minutes.

1. Write an equation. Give a sample input/output and describe the meaning.

2. Complete a table for the situation on domain $0 \leq h \leq 5$

X	Y



3. Graph the situation on the given domain

4. Describe the range.

5. Rewrite the equation as a function. Give a sample input/output and describe the meaning.

6. Find the output when the input is 20 minutes

7. Find the input when the output is -700 feet

8. Is the pattern linear? Is the pattern a function?