1.1 Create and Analyze Graphs

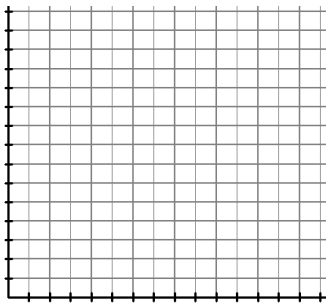
NOTES

ALGEBRA

Write your questions here!

FRO YO! Make your own frozen yogurt!

weight (ounces)	Price ($)
2	1.00
5	2.50
7	3.50
9	4.50
12	6.00
14	7.00



INDEPENDENT VARIABLE =

DEPENDENT VARIABLE =

TRY IT!

The table shows the score of a player on the game show Jeopardy!

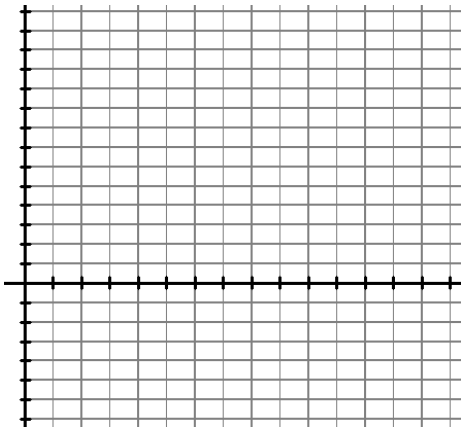
Time (*min*)	3	8	11	15	18	21	23	25
Score (*points*)	100	500	700	200	-300	-100	400	1200

Independent Variable

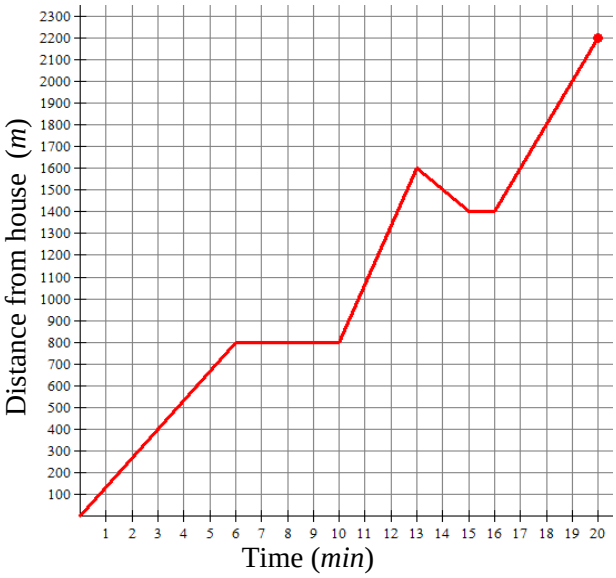
____ = _____

Dependent Variable

____ = _____



Running Man Mr. Brust likes to run to work. The table below shows the distance Mr. Brust is from his house over the course of his run.



Intervals

_____ (_____)	_____ (_____)
3	
5	
7	
9	
	1100
	1600

The point $(18, 1800)$ means

STORY TIME Professor Splash set the world record with a 36 foot belly flop into a 1 foot pool of water. Sketch a graph of his height over time.

SMP #4

SUMMARY:

Now, summarize your notes here!

1.1 Create and Analyze Graphs

PRACTICE

Identify the independent and dependent variable. Create and label a scatter plot. Answer the questions.

1. The area of a square is determined by the length of a side of that square as shown in the table below.

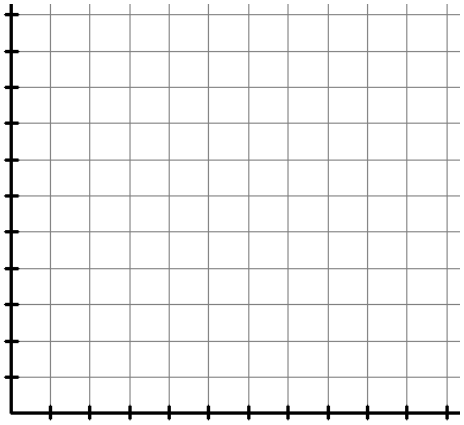
Side (cm)	Area (cm^2)
0	0
1	1
2	4
4	16
7	49
9	81

Independent Variable

____ = _____

Dependent Variable

____ = _____



a) What is the length of each side of a square that has an area of 36 m^2 ?
Mark this point on the graph with a ▲.

b) What does the point $(7, 49)$ mean in this situation?

Identify the independent and dependent variable. Create and label a scatter plot. Answer the questions.

2. Generic High School Math Club is selling math t-shirts to raise money for new calculators.

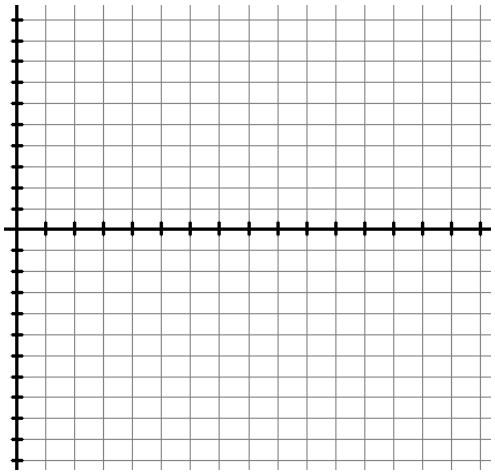
Shirts Sold (#)	Profit ($)
5	−40
10	−28
15	−16
20	−4
25	8
30	20

Independent Variable

____ = _____

Dependent Variable

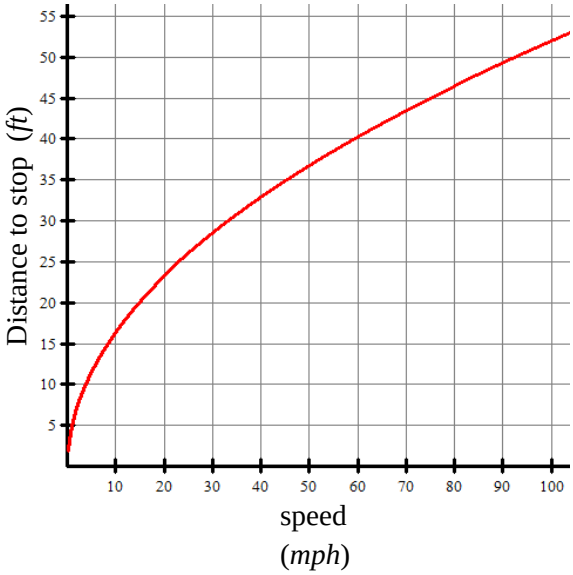
____ = _____



a) Approximately how many shirts must be sold in order for the club to break even? Justify.

Use the graph to identify the independent and dependent variable. Fill in the table and answer the questions.

3. The distance it takes to stop a car by applying its breaks is determined by the speed of the car and the road conditions. The table shows the distance to stop given the vehicle's speed on dry road conditions.



Independent Variable

____ = _____

Dependent Variable

____ = _____

Speed (____)	____ (ft)
60	
20	
	30
	45

a) What does the point $(15, 20)$ mean in this situation?

b) Police officers investigating a car accident find a 52 foot skid marks on a dry road. The driver of the vehicle said that they were going 45 mph at the time in which they applied the brakes. Is the driver telling the truth? Justify.

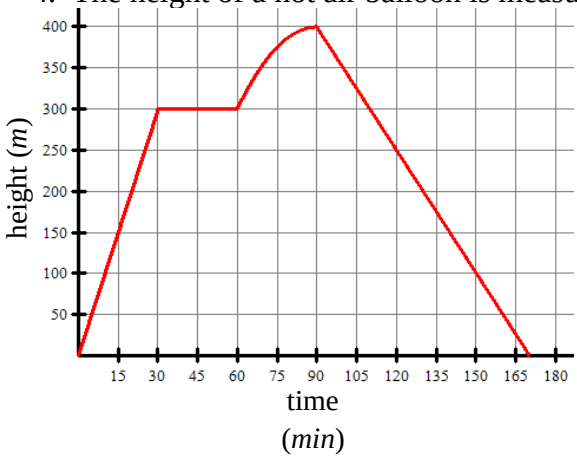
SMP #1

c) How would wet road conditions change the graph above?

d) Sketch a possible graph of wet road conditions on the graph above.

Use the graph to identify the independent and dependent variable. Fill in the table and answer the questions.

4. The height of a hot air balloon is measured over time.



Independent Variable

____ = _____

Dependent Variable

____ = _____

____ (____)	____ (____)
120	
75	
	400
	150

a) What does the point $(135, 175)$ mean in this situation?

b) Describe the rate of change of the hot air balloon over the first 30 minutes.

c) Describe what is happening over the interval 30 minutes to 60 minutes.

d) What is the maximum height of the hot air balloon?

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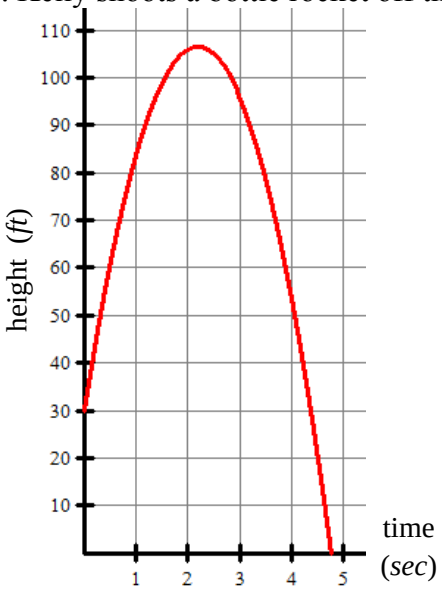
5. Mr. Kelly shoots a bottle rocket off the back deck of his house. The graph shows the rocket's height over time.



Independent Variable

____ = _____

Dependent Variable

____ = _____

____ (____)	____ (____)
4	
1	
	20
	50

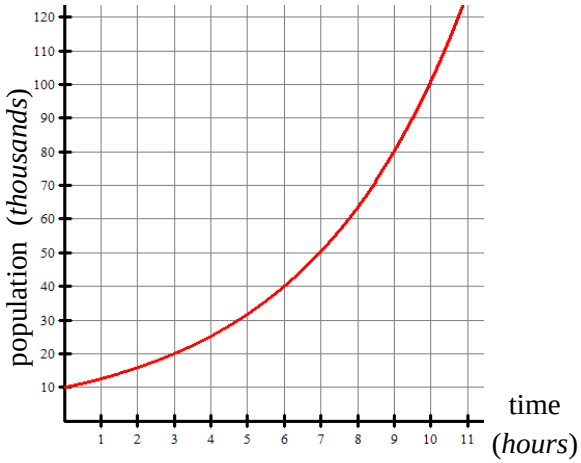
a) Use the graph to estimate how long the rocket is in the air.

b) Use the graph to estimate bottle rocket's maximum height.

c) How far off the ground is Mr. Kelly's deck?

Use the graph to identify the independent and dependent variable. Fill in the table and answer the questions.

6. The population of a certain bacteria grows over time as shown in the graph below.



Independent Variable

____ = _____

Dependent Variable

____ = _____

_____ (____)	_____ (____)
3	
6	
	100
	120

a) What does the point $(4, 25)$ mean in this situation?

SMP #6

b) What population did the bacteria start with?

c) When will the bacteria be 80,000 ?

d) How long does it take for the population of bacteria to double? Justify.

Analyze student work.

7. Rod and Tod were asked to identify the independent and dependent variable and create and label a scatter plot for the story below. Both Rod and Tod answered incorrectly. Explain their mistakes.

STORY Maud is curious about the effects of caffeine. She decides to drink "Monsters" and record her heart rate.

Caffeine Ingested (*mg*)	160	320	480	640	800
Heart Rate (*beats per min*)	70	85	95	100	108

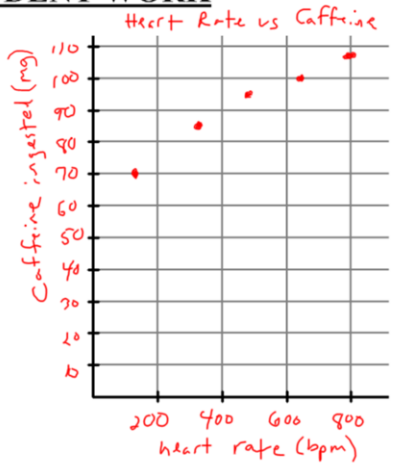
ROD'S STUDENT WORK

Independent Variable

h = heart rate (bpm)

Dependent Variable

C = caffeine ingested (mg)



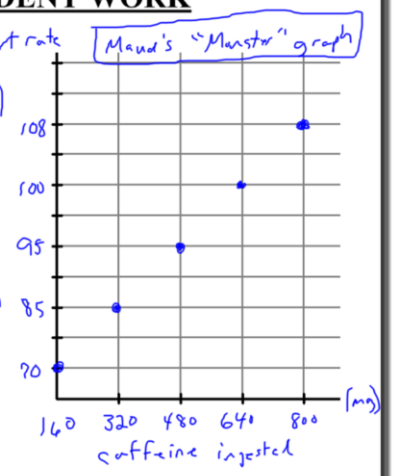
TOD'S STUDENT WORK

Independent Variable

C = caffeine ingested in mg

Dependent Variable

r = heart rate in beats/min



1. **Identify the independent and dependent variable. Create and label a scatter plot.**
   Ted's paycheck is determined by the number of hours worked as shown in the table below.

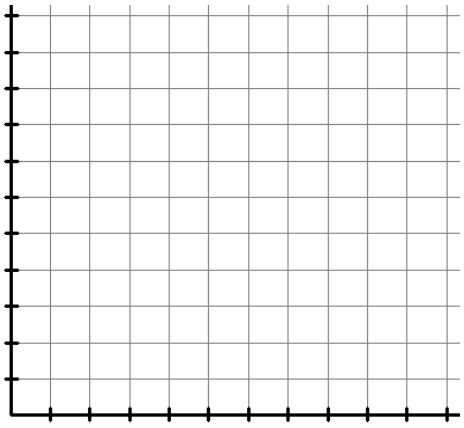
Time Worked (*hours*)	Paycheck (*dollars*)
10	80
18	144
22	176
26	208
32	256
38	304

Independent Variable

____ = _____

Dependent Variable

____ = _____



MULTIPLE CHOICE

2. The graph shows the temperature in a kiln while firing a piece of pottery. Over which time interval did the temperature in the kiln have the greatest rate of change?

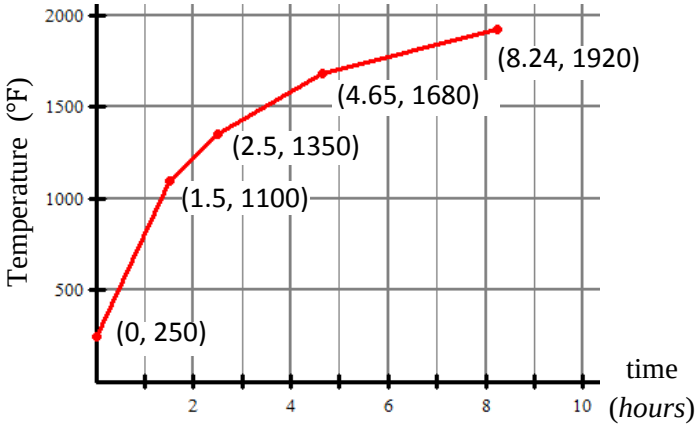
   A) 0 to 1.5 hours

   B) 1.5 to 2.5 hours

   C) 2.5 to 4.65 hours

   D) 4.65 to 8.24 hours

   E) Cannot be determined from the graph



EXIT TICKET – Match the story to its corresponding table and graph.

STORY A: A certain bacteria starts with a population of 300 a doubles every hour.
STORY B: A certain bacteria starts with a population of 300 increases 200 every hour.
STORY C: A certain bacteria starts with a population of 300 increases 450 every 3 hours.

TABLES

1

x	*y*
0	300
1	450
2	600
3	750

2

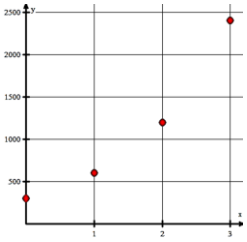
x	*y*
0	300
1	600
2	1200
3	2400

3

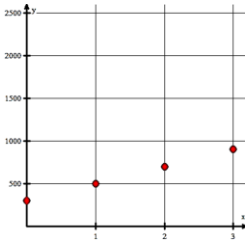
x	*y*
0	300
1	500
2	700
3	900

GRAPHS

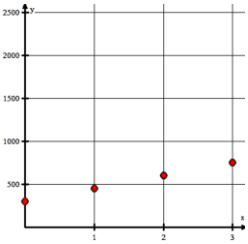
I



II



III



(NOTE FOR GRAPHS: *x*-axis interval is 0-3 with a scale of 1, *y*-axis interval is 0-2500 with a scale of 500)

Story _____ matches table _____ which matches graph _____

Story _____ matches table _____ which matches graph _____

Story _____ matches table _____ which matches graph _____