

Math 1201 Unit 5 SAMPLE Test: **ANSWERS**

Part A: Multiple Choice. Write the correct letter in the space provided to the right. (14 Marks)

1. A relation associates five foods to the food groups to which they belong:
{ (orange, fruit), (cheese, dairy) (broccoli, vegetable) (milk, dairy) (kiwi, fruit) }
- Which statement is true? 1. **B**

- A). Vegetable is an element in the domain.
- B). Orange is an element in the domain.
- C). This relation is not a function.
- D). Kiwi is an element in the range.

2. The equation $M = 4.4n$, relates the number of quarters, n , to its mass, M , in grams. What is the independent variable? 2. **C**

- A). The mass of the quarters.
- B). The value of the quarters.
- C). The number of quarters.
- D). Each quarter weighs 4.4 grams.

3. The height of a plane is a function of the time since take off. Identify the dependent variable? 3. **A**

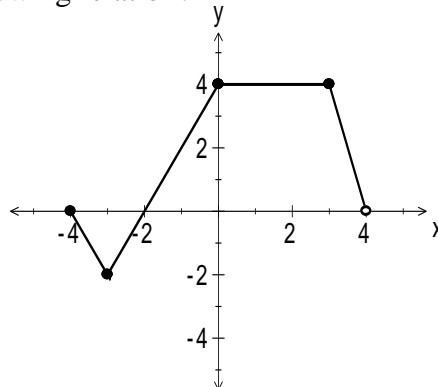
- A). height
- B). speed
- C). time
- D). acceleration

4. Which set of ordered pairs represents a function? 4. **C**

- A). { (1,1) (1,-1) (4,2) (4,-2) (9,3) }
- B). { (3,4) (3,5) (3,6) (3,7) (3,8) }
- C). { (2,4) (3,4) (4,4) (5,4) (6,4) }
- D). { (1,2) (2,3) (3,4) (4,5) (4,6) }

5. What is the domain of the following relation? 5. **B**

- A). $(-4, 4)$
- B). $[-4, 4)$
- C). $(-4, 4]$
- D). $[-4, 4]$



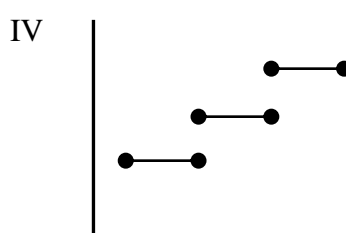
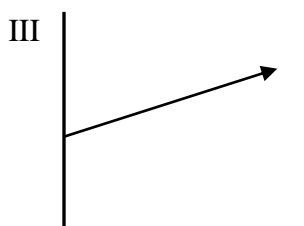
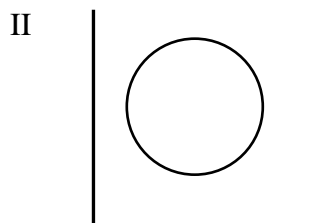
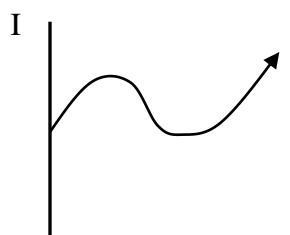
6. The cost, C , in dollars, of renting a hall for the prom is given by the formula $C(n) = 500 + 4n$, where n is the number of students attending the prom. Calculate the cost of renting the hall if 70 students attend. 6. C

- A). \$108 B). \$500 C). \$780 D) \$970

7. Which of the following is not linear? 7. A

- A). The height of a football thrown over time.
 B). The total weight of a jar of pennies as more pennies are added to the jar.
 C). The distance travelled by a car moving at a constant speed over time.
 D). A truck drivers salary of \$2500 a month plus \$0.50 for every kilometer driven.

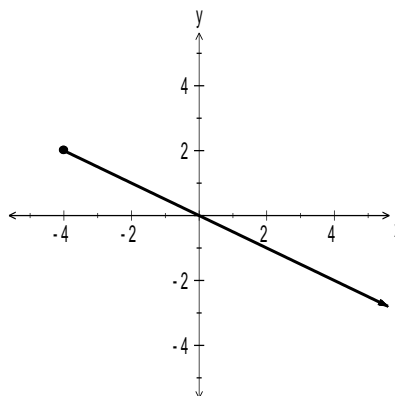
8. Which of the following relations are also functions? 8. B



- A). III only B). I and III only C). II and IV only D). I, II, and IV only

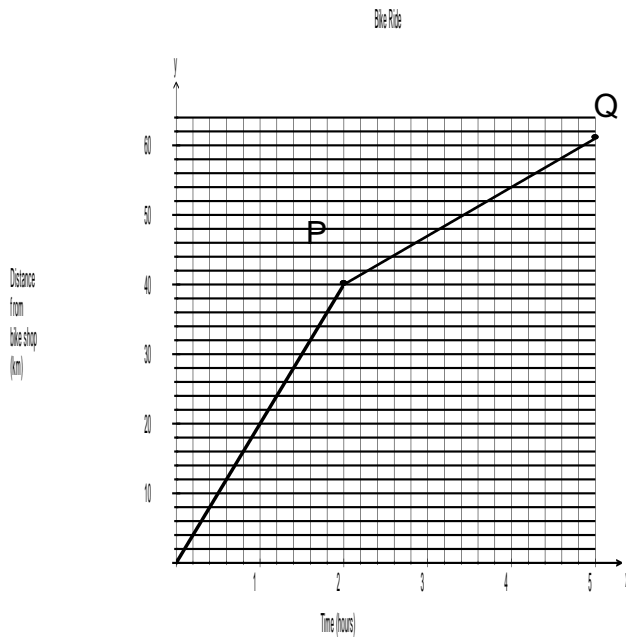
9. What is the range? 9. B

- A). $\{ y / y \leq -4, y \in \mathbb{R} \}$
 B). $\{ y / y \leq 2, y \in \mathbb{R} \}$
 C). $\{ y / y \geq -4, y \in \mathbb{R} \}$
 D). $\{ y / y \geq 2, y \in \mathbb{R} \}$



10. What is the rate of change from P to Q?

10. D



- A). decreased 7 km/h
- B). decreased 3 km/h
- C). increased 3 km/h
- D). increased 7 km/h

11. Which ordered pair represents $f(3) = -5$?

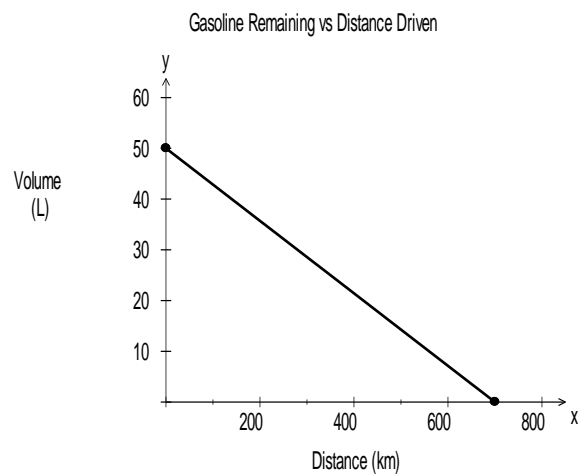
11. C

- A). $(-5, 3)$
- B). $(-3, 5)$
- C). $(3, -5)$
- D). $(5, -3)$

12. The graph below shows the relationship between the amount of gasoline remaining in a 50 L tank and the distance driven. What does the **x-intercept** represent in this situation?

12. C

- A). Fuel capacity of the gasoline tank.
- B). Total distance travelled during a long trip.
- C). Total distance driven until the car is out of gas.
- D). Number of kilometers driven per liter of gasoline.



13. Which table of values represents a linear relation?

13. A

A).

x	y
-2	7
-1	4
0	1
1	-2
2	-5

B).

x	y
-2	-1
-1	-4
0	-5
1	-4
2	-1

C).

x	y
-2	6
-1	8
0	11
1	15
2	20

D).

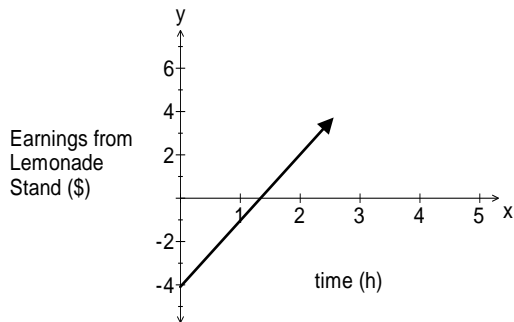
x	y
-2	1
-1	2
0	4
1	8
2	16

14. Which graph has a rate of change of \$3/h and a vertical intercept of -4?

14. A

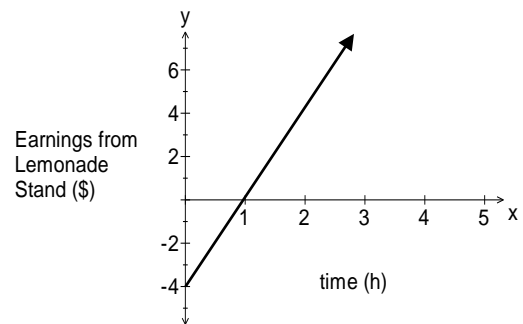
A).

Summer Lemonade Stand



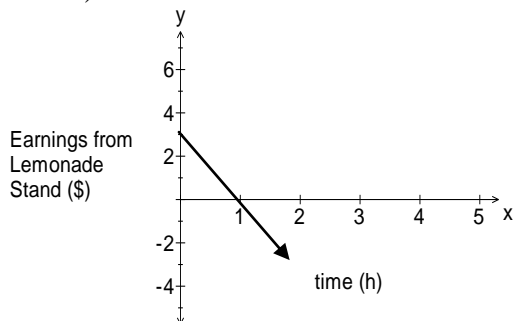
B).

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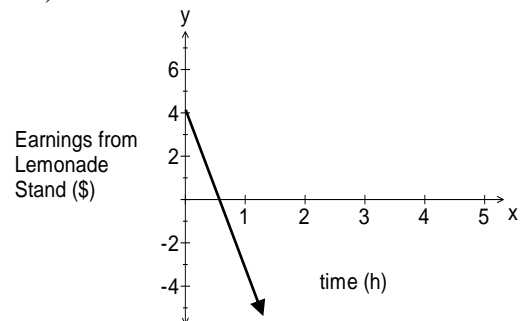
C).

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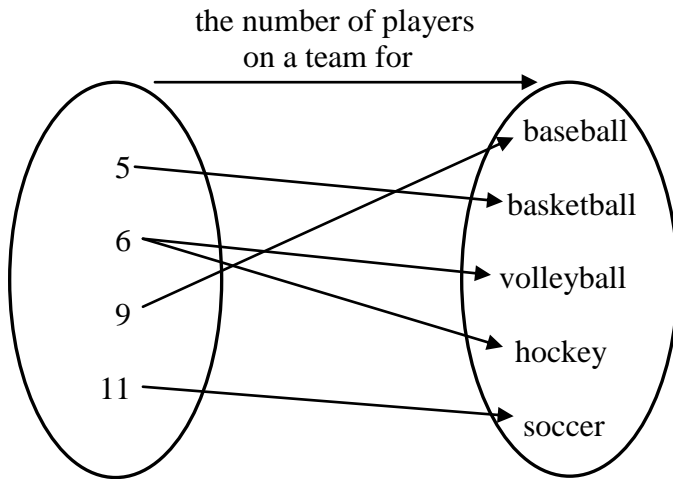
D).

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Part B. Constructed Response. Provide your answer in the space provided. Show all necessary workings to receive full marks. (26 Marks)

1. Is this relation a function? Explain why or why not. (2 Marks)



NO.

**(6, volleyball)
(6, hockey)**

Since an element in the domain is repeated (6), this is NOT a function.

2. Frank sells memberships to a local gym. The equation $E = 50n + 150$ represents his weekly earnings, E dollars, when he sells n memberships.

A). Write the equation in function notation. **$E(n) = 50n + 150$** (1 Mark)

B). Find the value of n when $E = \$900$. What does the number represent? (2 Marks)

$n = 15$ It's the number of memberships sold this week.

C). Is this a linear function? Explain why or why not. (2 Marks)

Linear. The degree of the equation is 1.

D). What is the rate of change? What does it represent? (2 Marks)

50 It's the amount Frank earns with each new membership.

3. Write a story to match the graph below. Be sure to include the time and the distance travelled in your story. (4 Marks)

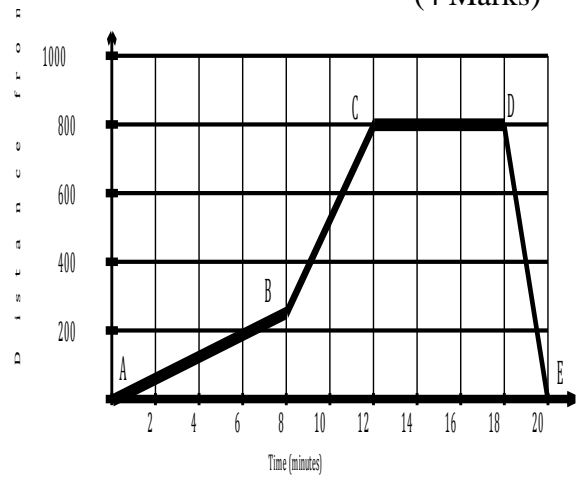
Answers will vary. Key things include:

AB – constant speed. Distance traveled was ~ 250m in 8 mins.

BC – faster but still a constant speed for the next 4 mins until a distance of 800m was reached.

CD – stopped for 4 mins

DE – very fast but constant speed. Returned home, all 800m in 2 mins.

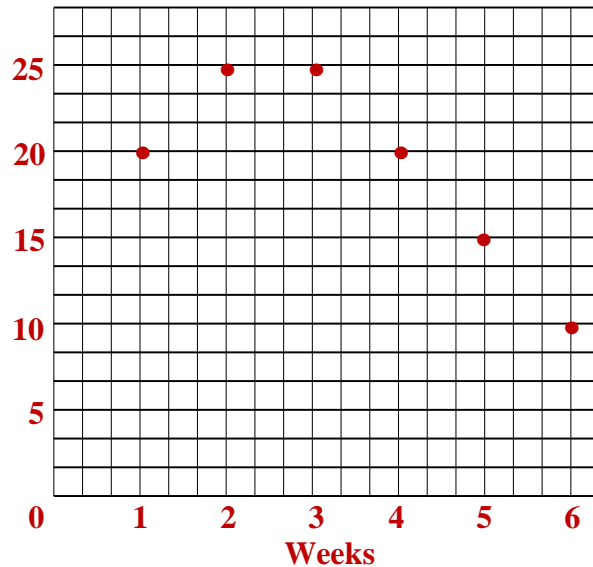


4. This table below shows the attendance for a weekly afterschool yoga class. Be sure to include all necessary labels.

Yoga Attendance

- a). Graph the data. (4 Marks)

Week	Number of students
1	20
2	25
3	25
4	20
5	15
6	10



- b). Does it make sense to connect the points? Explain. (1 Mark)

No, this is discrete data. Does not make sense to have half a student attend a class

- c). Is this relation a function? Explain. (1 Mark)

Yes, each domain (week) appeared only once. Graph passes the vertical line test.

5. Refer to the function $f(x) = 2x - 6$.

A). Determine the x – intercept.

(2 Marks)

$$x = 3 \quad \text{Point } (3, 0)$$

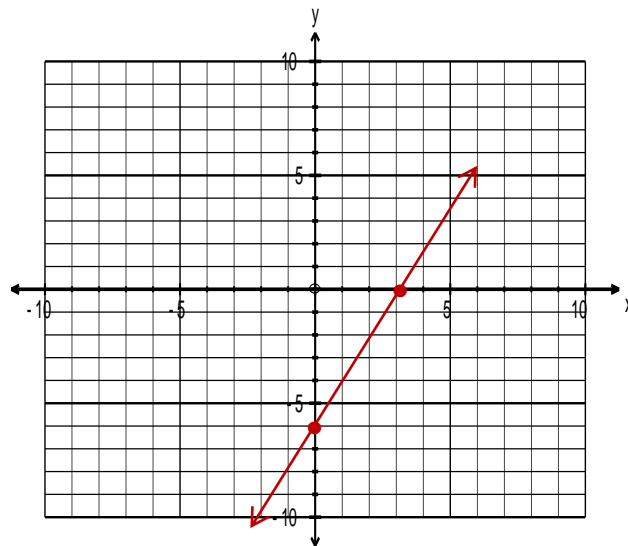
B). Determine the y – intercept.

(2 Marks)

$$y = -6 \quad \text{Point } (0, -6)$$

C). Plot the intercepts and draw the function on the grid provided.

(2 Marks)



D). What is the rate of change?

(1 Mark)

$$\frac{6}{3} = 2$$