Math 10

Lesson 3-8 Answers

**Assignment**

2. Representations may vary. For example:

a) As a table: As an arrow diagram:



As a set of ordered pairs:

{(carbon, 6), (chlorine, 17), (hydrogen, 1), (iron, 26),(oxygen, 8), (silver, 47)}

b) As a table: As an arrow diagram:



As a set of ordered pairs:

{(1, hydrogen), (6, carbon), (8, oxygen), (17, chlorine), (26, iron), (47, silver)}

3. a) Not a function

b) Function

c) Function

d) Not a function

4. a) *f*(*x*) = –4*x* + 9

b) *C*(*n*) = 12*n* + 75

c) *D*(*t*) = –20*t* + 150

d) *P*(*s*) = 4*s*

5. a) *P* = 5*n* – 300

b) Independent variable: *n*; dependent variable: *P*

c) *P*(150) = 450; if 150 students attend the dance, the profit is $450.

d) *n* = 200; the profit is $700 when 200 students attend the dance.

6. a) Graph A

b) Answers may vary. For example:

Graph D could represent Laura’s journey to school to pick up her bike. She walks to school, then picks up her bicycle and rides home.

7. b) 2 times

c) 2.0 L of water

d) Dependent variable: volume of water in Liam’s flask; independent variable: distance Liam hikes

8. a) I joined the points because all times between 0 min and 30 min are permissible and all temperatures between 50°C and 89°C are permissible.



b) The graph represents a function because a vertical line drawn on the graph passes through one point.

9. Estimates may vary.

a) Not a function; domain: {13, 14, 15, 16, 17}; range: {159, 161, 165, 168, 170, 174, 176}

b) Function; domain: {08:00, 10:00, 12:00, 14:00, 16:00, 18:00}; range: {2, 5, 10, 20, 25}

10. a)

i) Graph A represents the volume of a jar, in cubic centimetres, as a linear function of its height, in centimetres.

ii) Graph B represents the number of marbles in a jar as a linear function of the jar’s height, in centimetres.

b)

i) Independent variable: height of the jar, *h*; dependent variable: volume of the jar, *V*

ii) Independent variable: height of the jar, *h*; dependent variable: number of marbles in the jar, *n*

c)

i) Estimates may vary. For example:

Domain: 5 ≤ *h* ≤ 20 ; range: approximately 400 ≤ *V* ≤ 1575

ii) Domain: {5, 10, 15, 20}; range: {14, 28, 42, 56}

d) The points are joined in Graph A because it is possible for a jar to have any height between 5 cm and 20 cm and any volume between 400 cm3 and 1575 cm3. The points are not joined in Graph B because only whole numbers of marbles are permissible.

11. a) –2 b) –1

12. Graphs may vary. For example:



13. a) Linear relation b) Linear relation c) Not a linear relation

14. Tables of values may vary. For example:





b) i, iii, iv, v, vi

15.

a) The equation represents a linear relation because, when *g* changes by 1, *N* changes by .

b) ; For every 1 g of carbohydrate that Isabelle consumes, she gives herself of a unit of insulin.

16.

a) 6000 m, or 6 km

b) Domain: 0 ≤ *n* ≤ 2800 ; range: 0 ≤ *d* ≤ 6000

c) Approximately 2.1 m/revolution; in one revolution of the wheel, the bicycle covers a distance of approximately 2 m.

d) Approximately 0.68 m, or 68 cm

17. a) ii b) iii c) i

18.

a) 201 caps

b) $4

c) i) 350 caps ii) 500 caps

d) The profit depends on the sale of caps and the initial cost of $800 to buy or make the caps. So, doubling the number of caps does not double the profit.