Math 10

Lesson 3–2 Answers

Lesson Questions

Question 1

a) domain: {4, 6, 8, 9}
range: {2, 3}

The relation is not a function since the domain number 6 is associated with two number (2 and 3) in the range.

b) domain: {January, February, March, April}
range: {28, 30, 31}

The relation is a function since each domain element is associated with a range element.

Question 2

The table shows the costs of student bus tickets, *C* dollars, for different numbers of tickets, *n*.

a) The relation is a function since every *n* value has only one *C* value.
b) Since *C* depends on *n*, Independent variable is *n* and the dependent variable is *C*.
c) domain: {1, 2, 3, 4, 5, …}
range: {1.75, 3.50, 5.25, 7.00, 8.75, …}

Question 3

a) $F(C)=\frac{9}{5}C+32$

b) $F(25)=\frac{9}{5}(25)+32$

$\boxed{F(25)=77}$

c) $F(C)=\frac{9}{5}C+32$

$100=\frac{9}{5}C+32$

$100-32=\frac{9}{5}C$

$68=\frac{9}{5}C$

$\frac{5\cdot 68}{9}=C$

$\boxed{C=37.8}$

Question 4

a) $C(n) = 25n + 100$

b) $C(100) = 25(100) + 100$

$C(100) = 2600$

c) $C(n) = 25n + 100$

$5000 = 25n + 100$

$4900 = 25n$

$\frac{4900}{25} = n$

$\boxed{n = 196}$

Assignment

1. a) Function b) Not a function c) Function

2. a) Function; domain: {1, 2, 3, 4}; range: {3, 6, 9, 12}
   b) Not a function; domain: {–1, 0, 1}; range: {–1, 0, 1}
   c) Function; domain: {2, 4, 6, 8}; range: {3, 5, 7, 9}
   d) Not a function; domain: {0, 1, 2}; range: {1, 2, 3}

3. a) $C(n) = 20n + 8$
   b) $P(n) = n - 3$
   c) $t(d) = 5d$
   d) $f(x) = -x$

4. a) $d = 3t - 5$
   b) $y = -6x + 4$
   c) $C = 5n$
   d) $P = 2n - 7$

5. a) Function; domain: {1, 2, 3, 4}; range: {1, 8, 27, 64}
   b) Not a function; domain: {3}; range: {4, 5, 6, 7}

6. a) i) Function
      ii) Dependent variable: *C*; independent variable: *n*
      iii) Domain: {1, 2, 3, 4, 5, 6, …}; range: {2.39, 4.00, 6.39, 8.00, 10.39, 12.00, …}
   b) i) Function
      ii) Dependent variable: *T*; independent variable: *A*
      iii) Domain: {610, 1220, 1830, 2440, 3050, 3660, …}; range: {15.0, 11.1, 7.1, 3.1, –0.8, –4.8, …}

7. The statement in part a is true.

8. a) i) $n = 9$
      ii) $n = ½$ or 0.5
   b) i) $x = -8$
      ii) $x = 17/5$ or 3.4

9. a) $C = 2.54i$
   b) $C(12) = 30.48$
   c) $i = 39.3700\ldots$

10. a)
   i) $f(15) = 112.785$; a female whose humerus is 15 cm long will be approximately 113 cm tall.
   ii) $m(20) = 128.521$; a male whose humerus is 20 cm long will be approximately 129 cm tall.
   b)
   i) $l = 25.6082\ldots$; a female who is 142 cm tall will have a humerus length of approx. 26 cm.
   ii) $l = 42.6257\ldots$; a male who is 194 cm tall will have a humerus length of approx. 43 cm.

11.
   a)
      i) $C(50) = 10$
      ii) $C(-13) = -25$
   b)
      i) $f = 68$
      ii) $f = -31$
   c)
      i) $C(32) = 0$
      ii) $C(212) = 100$
      iii) $C(356) = 180$

12. $P(l) = 2l + \frac{18}{l}$

13. $t(s) = 11 - 2s$