Math 210 - Dr. Miller - Homework #34: Divisibility Terminology

1. Explicitly use the definition of the term "divides" in explaining whether each statement below is true or false.

   (a) 9 is a divisor of 15.

   (b) 28 is a multiple of 7.

   (c) 5 is a factor of 45.

   (d) 18 divides 6.

   (e) 6 | 12

2. Decide which of the following are true and which are false, giving reasons.

   (a) 8 is a factor of 24.

   (b) 7 is divisible by 35.

   (c) 30 is a multiple of 4.

   (d) 30 is a multiple of 2.

   (e) 30 is a factor of 2.

   (f) 30 divides 2.

   (g) 2 divides 30.

   (h) 42 is divisible by 6.

   (i) 0 | 3

   (j) 3 | 0

   (k) 0 is a multiple of 3.

   (l) 1 is a factor of every whole number.

3. List all the whole number factors of each number below.

   (a) 36

   (b) 45

   (c) 165

   (d) 240

   (e) 275

4. List "all" the whole number multiples of each number below.

   (a) 12

   (b) 45

   (c) 75

   (d) 160

   (e) 235

1. (a) False because $9 \cdot \triangle = 15$ cannot be completed with a whole number.

   (b) True because $7 \cdot \triangle = 28$ can be completed with the whole number 4.

   (c) True because $5 \cdot \triangle = 45$ can be completed with the whole number 9.

   (d) False because $18 \cdot \triangle = 6$ cannot be completed with a whole number.

   (e) True because $6 \cdot \triangle = 12$ can be completed with the whole number 2.

2. (a) True because $8 \cdot \triangle = 24$ can be completed with the whole number 3.

   (b) False because $35 \cdot \triangle = 7$ cannot be completed with a whole number.

   (c) False because $4 \cdot \triangle = 30$ cannot be completed with a whole number.

   (d) True because $2 \cdot \triangle = 30$ can be completed with the whole number 15.

   (e) False because $30 \cdot \triangle = 2$ cannot be completed with a whole number.

   (f) False because $30 \cdot \triangle = 2$ cannot be completed with a whole number.

   (g) True because $2 \cdot \triangle = 30$ can be completed with the whole number 15.

   (h) True because $6 \cdot \triangle = 42$ can be completed with the whole number 7.

   (i) False because $0 \cdot \triangle = 3$ cannot be completed with a whole number.

   (j) True because $3 \cdot \triangle = 0$ can be completed with the whole number 0.

   (k) True because $3 \cdot \triangle = 0$ can be completed with the whole number 0.

   (l) True because $1 \cdot \triangle = x$ can be completed with the whole number x, no matter what whole number x is to begin with.

3. (a) 1 and 36, 2 and 18, 3 and 12, 4 and 9, 6 (and itself)

   (b) 1 and 45, 3 and 15, 5 and 9

   (c) 1 and 165, 3 and 55, 5 and 33, 11 and 15

   (d) 1 and 240, 2 and 120, 3 and 30, 4 and 60, 5 and 48, 6 and 40, 8 and 30, 10 and 24, 12 and 20, 15 and 16

   (e) 1 and 275, 5 and 55, 11 and 25

4. (a) 0, 12, 24, 36, 48, ...

   (b) 0, 45, 90, 135, 180, ...

   (c) 0, 75, 150, 225, 300, ...

   (d) 0, 160, 320, 480, 640, ...

   (e) 0, 235, 470, 705, 940, ...