MAT033 Pre-Algebra
HW 1: Integers & Factors

Part a: Integers

(1) Order from smallest to largest:

1. $-5, 2$
2. $6, 10, -200, 0$

(2) Draw a number line to represent the following, and find the answer:

1. $0 + -5$
2. -2×-4

(3) Solve:

$x = -3 + -5$ $\qquad$ $y = 5 + -3$

$n = -3 + 2 - 6$

$q = -3 \times 5$ $\qquad$ $r = 3 \times 5$

$x = 3 + 2 \times 4$ $\qquad$ $y = (3 + 2) \times 4$

(4) Solve:

A plane carrying a sky-diver takes off from sea-level. It flies 100 m up, then dives 12 m, then climbs 25 m.

- Draw a number line to describe the airplane flight.
- How high above sea level is the airplane?
- If the sky-diver falls 40 m and then opens a parachute, how high above sea-level is he?

- If the sky-diver sinks 25 m into the ocean, how far is the distance between the sky-diver and the airplane?

Part b: Factors

1. Find all of the prime numbers between 70 and 100

2. Find the Greatest Common Factors of the following pairs of numbers, first using Method 1, and then using the Euclidean Algorithm: (a) (16,48) (b) (42,63) (c) (21,16) (d) (52,39)

3. Find the Least Common Multiple of the number pairs in the previous problem

4. A mother wishes to divide 6 chocolate bars evenly among 4 children. What is the smallest total number of pieces needed, into how many pieces must each bar be broken, and how many pieces does each child receive?

5. Calculate the prime factors of the following numbers
   (a) 1620
   (b) 375

6. Which of the following numbers divides by 3 with no remainder: (a) 246,105 (b) 17 (c) -27 (d) 178,316,166 (e) 29,629,630

7. A school PE coach is organizing sports teams for the school year. The coach wants to divide all of the children into complete teams. For example, if there are 14 students he could form three basketball teams, but the third team would be incomplete (it would only have 4 players, but for basketball it should have 5; the coach needs 10 or 15 students instead). If every student will play lacrosse, basketball, relay racing, and baseball, what is the smallest number of children the coach needs in order to divide all of them into complete teams for all of the sports? (There are 9 players on a baseball team, 4 on a relay racing team, 5 on a basketball team and 10 on a lacrosse team).