

**Algebra Review #1**

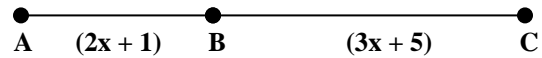
1) Simplify each expression.

- a)  $4x - 3 + 2x + 1$       b)  $-4x - (3x + 2)$       c)  $3(2x + 5) - 6x$       d)  $(13x - 6) - 3(x + 1)$

2) Solve each equation.

- a)  $2x + (x - 40) = -22$       b)  $-2x + 3 = x - 12$       c)  $\frac{x}{8} + 20 = 24$       d)  $3x + 4(x - 2) = 10 + x$

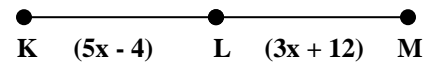
3) A length of uncooked spaghetti is broken into two pieces at point B. Refer to the diagram at the right to answer the following questions.



- a) In terms of  $x$ , what is the length of segment AB?      b) In terms of  $x$ , what is the length of segment BC?
- c) In terms of  $x$ , what is the total length of segment AC? Show your work.

- d) If the length of segment AB is 9 centimeters, what is the value of  $x$ ? Show your equation and your work.
- e) If  $x =$  the value you found above, what is the length of segment BC? Segment AC? Show your work.
- f) If the length of segment AC is 36 cm, what is the value of  $x$ ? Show your equation and your work.
- g) If  $x$  equals the value found above, what is the length of segment AB? Segment BC? Show your work.

4) A length of string is cut into two **congruent** pieces at point L. In other words, L is the **midpoint** of segment KM. Refer to the diagram at the right to answer the following questions.



- a) Since segment KL and segment LM are congruent, set up an equation to solve for  $x$ . What is the value of  $x$ ?
- b) What is the length of segment KL? Show your work.
- c) What is the length of segment LM? Explain/Show how you arrived at your answer.
- d) What is the length of segment KM? Explain how you obtained your answer.