

**6. Reasoning Problems.***Answers in boxes. Think like you are typing. to be collected*

1. Use the sketch below to answer a-d. Response (d) is a bonus problem.

- a) Name one angle that must be congruent to  $\angle 1$  in order to prove that  $c \parallel d$ . Explain your reasoning.

- b) Name one angle that must be congruent to  $\angle 1$  in order to prove that  $a \parallel b$ . Explain your reasoning.

- c) If  $a \parallel b$  and  $c \parallel d$ , what is the relationship between  $\angle 12$  and  $\angle 1$ ? Explain your reasoning.

- d) The measure of  $\angle 13$  equals  $(6x+40)$  degrees and the measure of  $\angle 16$  equals  $(120-4x)$  degrees. If  $a \parallel b$ , what is the value of  $x$ ? Show your work and/or explain your answer.

