Worksheet 1: Basic Notions and Angles

Show all work for full credit.

1. A teacher asks his/her students to write a proof explaining why every square is also a parallelogram. To answer this question, a student must be at least to what van Hiele level? Explain. (2 points)

2. Given three collinear points A, B, C, with B between A and C, four different rays can be named using these points. For example \( \overrightarrow{AB}, \overrightarrow{BA}, \overrightarrow{BC}, \) and \( \overrightarrow{CB} \). Determine how many different rays can be named given each of the following:
   a. Four collinear points. (1 point)
   
   b. \( n \) collinear points. You must clearly explain why to receive full credit. (2 points)

3. Conversions. Show your work. (2 points each)
   a. 450 ft/sec = ____________ mph

   b. 81 inches = ____________ yards

   c. 8500 mm = ____________ hm
4. In the following figure, the measure of \( \angle ACD \) is 6° more than the measure of \( \angle ECB \). The measure of \( \angle DCE \) is 10° more than twice the measure of \( \angle ECB \). Find the measure of the following angles. (3 points)

Clearly explain your work. Correctly identifying the angle measure is only half the credit.

- \( \angle ACD = \) __________
- \( \angle DCE = \) __________
- \( \angle ECB = \) __________

5. Convert 18.46° to degrees, minutes, and seconds. (2 points)

6. Convert 30\( ^\circ \)28’12” to degrees. (2 points)

7. Perform the following operations. Leave your answer in simplest form. Clearly explain your work. Show any borrowing or carrying. (2 points each)

   a. 15° 28’ 57”
   b. 55° 36’ 25”
   + 37° 42’ 29”
   ─ 14° 48’ 33”