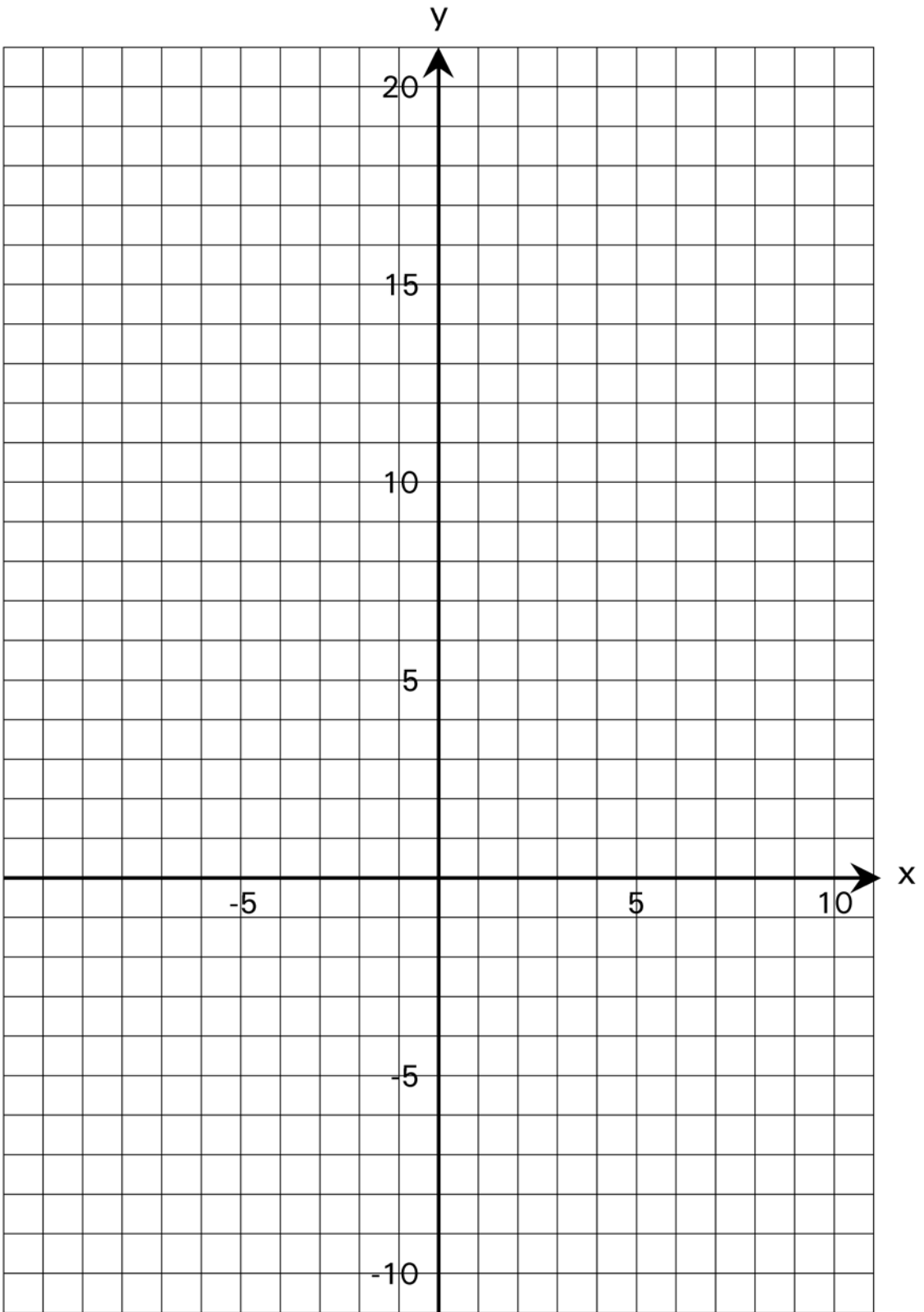


Assignment 6

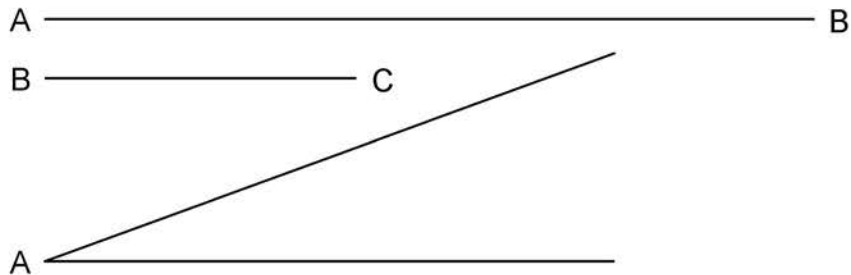
1. Here is an exercise that requires patience but gives an interesting result. A graph grid has been provided on the following page. Plot the points in each list below, then connect them **in order** with straight line segments. After the points in one list have been connected in order, start all over again with the next list. **Do not connect the last point in each list to the first point in the next one.** When you are done, a drawing of the comic strip character **BC** will appear. See <http://www.johnhartstudios.com/bc/>.

- a) $(-3, 10)$ $(-2, 8)$ $(-5, 2)$ $(-7, 1)$ $(-5, 0)$ $(-2, 0)$ $(-2, -8)$ $(-6, -8)$ $(-7, -9)$
 $(-4, -9)$ $(-5, -10)$ $(2, -10)$ $(2, -3)$
- b) $(-4, -9)$ $(0, -9)$ $(0, 5)$ $(-2, 1)$ $(0, 1)$
- c) $(2, 4)$ $(2, 0)$ $(3, -1)$ $(3, -2)$ $(2, -3)$ $(0, 0)$ $(-2, 0)$
- d) $(2, 1)$ $(6, 1)$ $(5, 0)$ $(2, 0)$
- e) $(-5, 2)$ $(-4, 1)$ $(1, 7)$ $(1, 8)$ $(3, 9)$ $(4, 9)$
- f) $(1, 7)$ $(5, 1)$
- g) $(2, 13)$ $(4, 14)$ $(5, 13)$ $(4, 12)$ $(6, 11)$ $(6, 10)$ $(3, 9.5)$
- h) $(-7, 12)$ $(-6, 14)$ $(-5, 15)$ $(-1, 15)$ $(0, 16)$
- i) $(0, 15)$ $(1, 16)$ $(2, 16)$
- j) $(-6, 11)$ $(-5, 14)$
- k) $(-5, 10)$ $(-4, 13)$
- l) $(-4, 9)$ $(-4, 11)$
- m) $(-2, 12)$ $(-3, 12)$ $(-3, 11)$ $(-2, 10)$
- n) $(2, 12)$ $(4, 12)$
- o) $(0, 13)$ $(1, 13)$

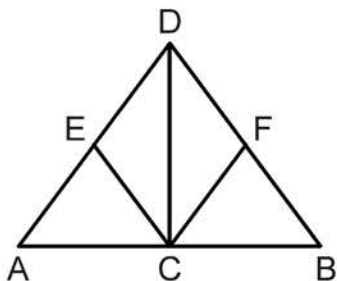
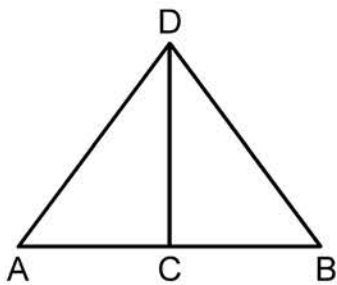




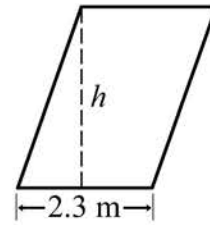
2. Construct a triangle(s) from the three parts shown below using only compass and straightedge. Be sure you match up the endpoints labeled with the same letter. ACCURACY IS ESSENTIAL. It is recommended that you verify your angle with a protractor and your side lengths with a ruler. There will be more than one solution.



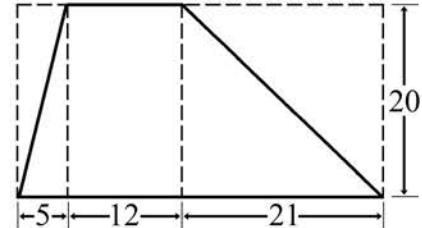
3. In the first diagram below, \overline{CD} is the perpendicular bisector of \overline{AB} . Prove that the two right triangles are congruent. In the second diagram, two line segments have been added so that \overline{CD} bisects $\angle ECF$. Use corresponding parts of the two congruent right triangles to help prove that $\triangle ECD \cong \triangle FCD$ and hence that $\overline{CE} \cong \overline{CF}$. Present your entire proof in a two column format (as per the proofs on pages 110 and 111).



4. Find the height of the parallelogram that has area 7.13 m^2 and base length 2.3 m .



5. Find the area of the trapezoid in three ways:
a) by using the area of a trapezoid formula.



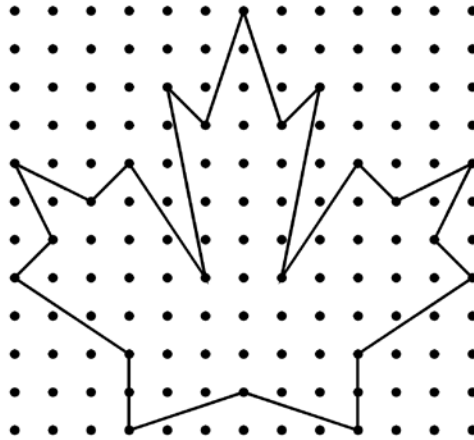
- b) by adding the areas of 2 triangles and a rectangle.

- c) by subtracting the areas of 2 triangles from the area of a rectangle.

6. Find the perimeter of a regular polygon if the apothem is 9 m and the area is approximately 259.2 m^2 .

7. A small apple pie has a diameter of 8 inches, and a large cherry pie has a diameter of 10 inches. How much larger (in square inches) is the large pie assuming the two pies have the same thickness? Use the π key on your calculator rather than entering a decimal approximation.

8. Use Pick's Formula to find the area of the maple leaf.



9. Go to the web page

<http://britton.disted.camosun.bc.ca/geometry/pick.html>

and use the applet therein to reproduce the maple leaf in question 8. All you have to do is click on the location of the border points in cyclic order. They will be joined automatically into a polygonal region as you add the points sequentially. Do not attempt to drag your mouse from point location to point location. That is not how the applet works. To prove that you used the applet, print the final result and attach it to this assignment.

Do the number of border points, the number of interior points, and the area provided by the applet agree with your results in question 8?

10. In 1998, the big event at Parkland Secondary School in Sidney was the Cow Drop Contest. A farmer brought his well-fed bovine to wander the rugby field until – well, you get the picture. Suppose that before the contest, the rugby field, which measures 53 yards wide by 100 yards long, was divided into square yards. Individuals, classes and school clubs could purchase square yards. If one of their squares is where the first dropping lands, they win a big prize. If the math club purchases 10 squares, what is the probability that the club wins?