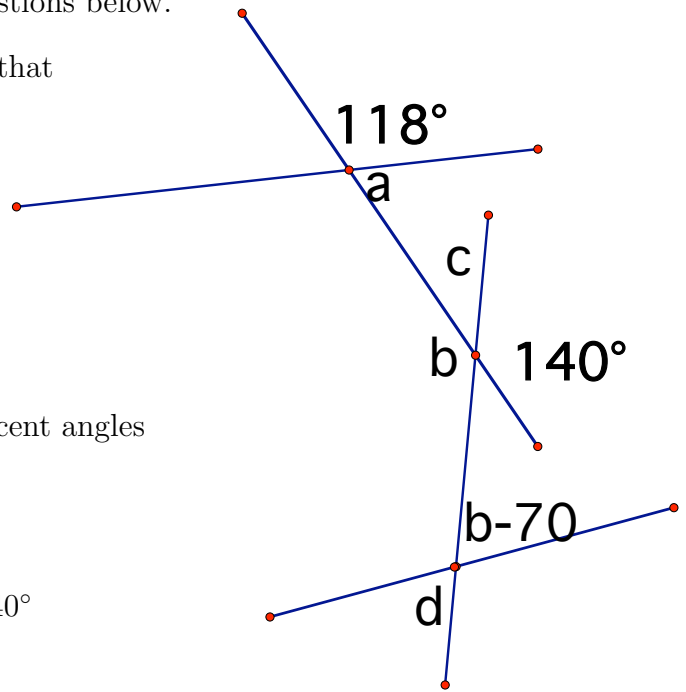# tcore 112: Midterm

1. Consider the diagram on the right for the questions below.

   (a) [2] (Wheater §2.4 #8) Identify two lines that do not intersect.

   (b) [2] (Activity1 #8)
       Find the measure of ∠b

   (c) [3] (Activity1 #8) Identify a pair of adjacent angles

   (d) [2] (Quiz1 #4) Identify an angle that is 40°

   118°
   a
   c
   b   **140°**
   b-70
   d

2. [2] Define Origami.

3. [4] (Lang) Recall in origami that there are designated symbols for certain actions or folds. Draw the origami symbols that mean:

   (a) valley fold

   (b) fold and unfold

4. [3](TED talk 1/8) Identify two applications of origami that Dr. Lang highlighted in his TED talk.
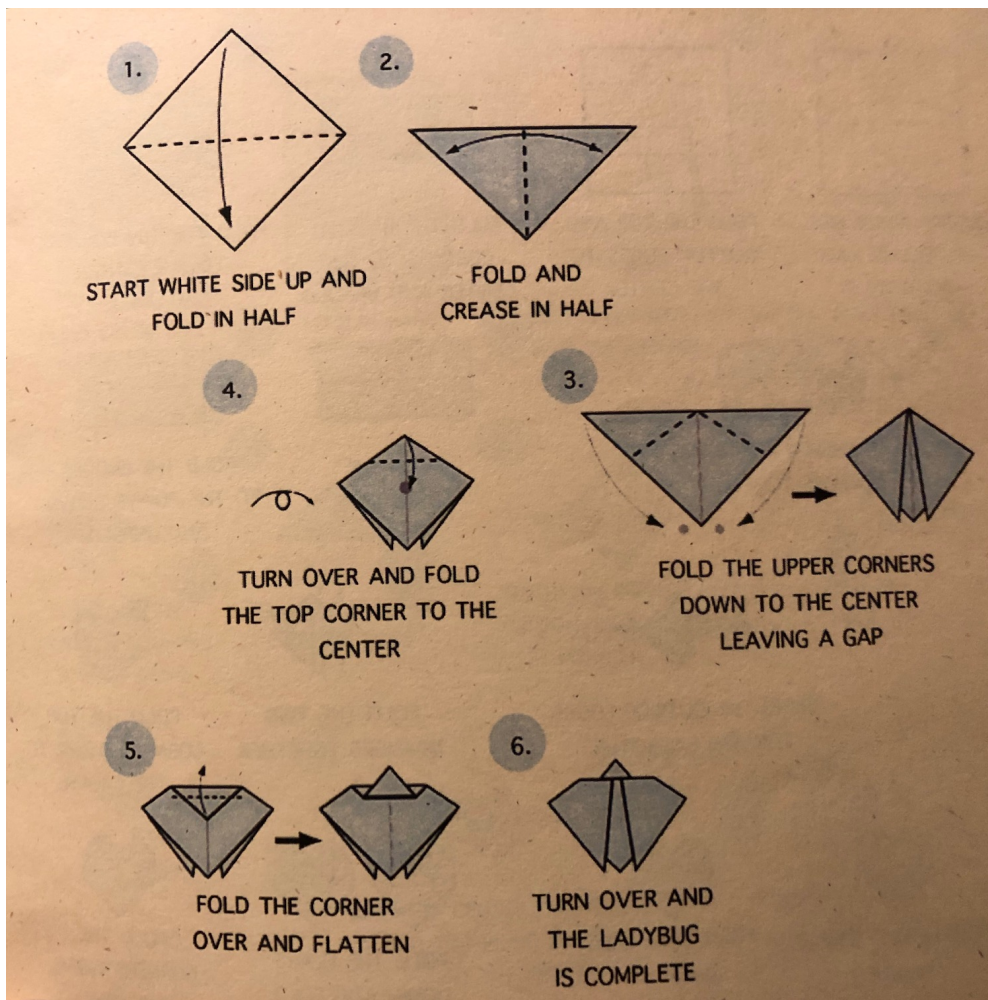
5. Consider the tools, physical tools, for a moment....

   (a) [2] (Lecture 1/6) What tools are you allowed to use during patty paper worksheet investigations?

   (b) [2] (Lecture 4/10) Name two tools mathematicians born before 100AD could use to study geometry problems?

   (c) [2] (Lecture 4/10) Name two tools mathematicians born before 100AD could *not* use to study geometry problems?

6. [6] Fold the ladybug whose directions are below (from Stadium High School Cultural Exchange), write your name on the patter, and turn in the result with the exam.

Writing Organization & Style	*intro or conclusion is missing *content is presented in a confusing manner *paragraphs & sentences are badly constructed	*Intro or conclusion is poorly written *content is present *most paragraphs & sentences are awkward	*intro or concl. are well organized *content is present but not well organized *some paragraphs & sentences are awkward	*intro & concl. are generally organized *organized most of the way through *a few sentences are awkward	*has well written & organized intro, concl. *well organized throughout the paper *Paragraph & sentence structures are used well

7. [4] (2/3 Discussion) Evaluate the following excerpt (1st and 2nd paragraph) from a Literature review of Pythagorus as you would for a peer with respect to the Organization row of the rubric. Note that you do not need to consider the conclusion. Be careful to provide effective peer feedback!

Pythagorus is one of the oldest and best known mathematicians. Croton was experiencing a religious revival "leading to a plethora of quasi-religious communities...(that) shared (an) appreciation of a roster of taboos and rituals" (Barrow 1992). Pythagorus had a particularly interesting one that seemed to worship numbers and assumed their deep connection with, among other things, geometry.

Perhaps even more famous than the mathematician is the theorem that bears his name. The theorem relates to triangles. Let us denote the three side lengths of a triangle with letters, a, b, and c. Many know the Pythagorean theorem as "A right triangle satisfies the equation, $a^2 + b^2 = c^2$ where c is the length of the hypothenuse". This version of the Pythagorean theorem is quite useful in finding unknown lengths computationally. Interestingly, this is only *half* of the theorem! In particular, if $a^2 + b^2 = c^2$, then we can say that the triangle has a right angle. This second half of the Pythagorean Theorem thus gives us a way of checking if an angle is 90° or not.

8. (Technical Communication Today Reading) Richard Johnson-Sheehan gave a long list of suggestions to authors of instruction sets.

   (a) [1] Identify one of his suggestions that you use well.

   (b) [1] Identify one of his suggestions that you think *if you used this suggestion*, it would improve your write-ups for the activities.

9. (Quiz2 #1) Consider the study techniques you used for this course so far and for this exam.

   (a) [2] Critique the *effectiveness* of your study technique used for this exam. If it was not *effective*, what could you have done differently to make your studying more *effective*?

   (b) [2] Critique the *efficiency* of your study technique used for this exam. If it was not very *efficient*, what could you have done differently to make your studying more *efficient*?

10. Group Question (only one copy needs to be turned in per group): Begin with a triangle. You need to find a point that is the same distance from each of the three vertices, if it exists. Your answer should include:

   (a) [5] Step by step instructions for how to find this point that will work for *any* triangle, and

   (b) [5] Justification for why your procedure works.