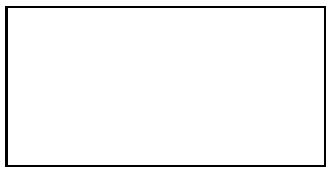
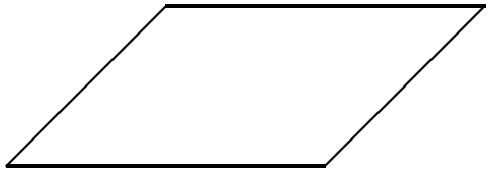
Math 310 - Dr. Miller - Homework #1: Part of a Whole Tasks

HW handouts don't have space to work like Activity handouts do; use your own paper. Print out and color the Fraction Tiles on my web page for answering the following (solutions are online):

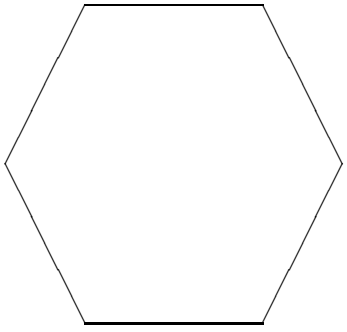
1. (a) If a yellow tile is worth a whole, how would you represent 3/4 of the whole? Explain.
   (b) An orange tile is worth a whole; how would you represent 5/4 of the whole? Explain.
   (c) If a red tile is worth a whole, how would you represent 2/3 of the whole? Explain.
2. (a) If 2 blue tiles are worth a whole, how would you represent 1/4 of the whole? Explain.
   (b) Three green tiles are the whole; how would you create 5/6 of the whole? Explain.
   (c) Two orange tiles are the whole; how would you represent 5/4 of the whole? Explain.
3. (a) The rectangle below represents the fraction 2/3. Trace it, then draw a region representing the whole.



   (b) The rectangle is now worth 5/6 of the whole; trace it and draw a region representing the whole.
   (c) The rectangle is worth 8/3 of the whole. Trace it, then draw a region representing the whole.
4. (a) The diagram below represents 5/8 of the whole. Trace it, then draw a diagram representing the whole.



   (b) The diagram is worth 3/2 now. Trace it, then draw a region representing the whole.
5. (a) If the hexagon below represents the fraction 3/5, trace it and draw a diagram that represents the whole.



   (b) If the same hexagon represents the fraction 2/3, draw a diagram representing the whole. (Trace the original.)
   (c) If the same hexagon represents the fraction 3/4, draw a diagram representing the whole. (Trace the original.)
6. (a) If a pink tile is worth 1/3, how would you represent 1/2 of the same whole? Explain.
   (b) If a pink tile is worth 1/6, how would you represent 3/4 of the same whole? Explain.

Math 310 - Dr. Miller - Solutions to HW #1

1. (a) 3/4 equals 3 green – Four green fill the whole (given as 1 yellow); keep 3 of those 4 green.
   (b) 5/4 equals 5 pink – Four pink pieces cover the whole (an orange); we need to gather 5 such pieces.
   (c) 2/3 equals 2 pink – Three pink make the whole (a single red); keep 2 of those pink.

2. (a) 1/4 equals 1 pink – Four pink cover the whole (2 blue together); keep 1 of the 4 pink.
   (b) 5/6 equals 5 black – It takes six black pieces to cover the whole (3 green together); keep 5 of them.
   (c) 5/4 equals 5 blue – Four blue cover the whole (2 orange together); collect 5 of those blue pieces.

3. (a) Cut the rectangle into 2 pieces: each is worth 1/3 of the (unknown) whole. **(Be sure you understand that this is NOT the same as saying each is worth 1/3 of the original rectangle, because that rectangle is NOT the whole! Besides, if you really wanted 1/3 of the rectangle - WHICH IS NOT WHAT'S ASKED FOR - you'd better cut the rectangle into 3 pieces, right?)** Now put 3 of your correct 1/3 pieces together to form the actual whole.
   (b) The rectangle is made up of 5 pieces now, and each is worth 1/6 of the unknown whole (label them as such to make it easier). Put 6 of your sixths together to make the correct whole.
   (c) Show that the rectangle is cut into 8 pieces, each of which is worth (labeled) 1/3 of the unknown whole. Keep just 3 of your thirds to make the correct whole.

4. (a) Cut the parallelogram into 5 pieces, each of which is worth (labeled) 1/8 of the unknown whole. Put 8 of these eighths together to make the correct whole.
   (b) The diagram is made of 3 pieces now, each worth (labeled) 1/2 of the whole. So put just 2 of those halves together to create the correct whole.

5. (a) Cut the hexagon into 3 identical sections (rhombus-shaped), and label each as 1/5 of the whole. Assemble 5 sections altogether to make the whole.
   (b) Here, cut the hexagon horizontally to make 2 trapezoids, each worth 1/3 of the whole. The whole will be represented by 3 of those trapezoids (put the third one underneath like a pedestal).
   (c) As above, cut the hexagon into 3 identical rhombus sections each worth 1/4 of the whole and represent the whole by arranging 4 such rhombuses into a nice pattern.

6. (a) (Strategy: find the whole first) Since 1 pink is worth 1/3 of the whole, we need 3 pink together to make the entire whole (that matches 1 red, if you want a simpler shape for the whole). Now cut the whole into 2 pieces - using 2 blue tiles - and keep one of them. Answer: 1 blue tile.
   (b) (Strategy: find the whole first) Since 1 pink is worth 1/6 of the whole, we need 6 pink together to make the entire whole (that matches 1 yellow, if you want a simpler shape for the whole). Now cut the whole into 4 pieces - using 4 green tiles - and keep 3 of them. Answer: 3 green tiles.