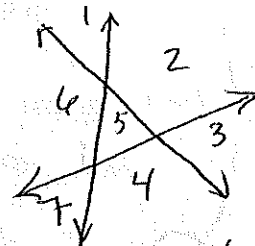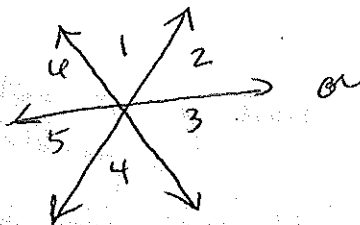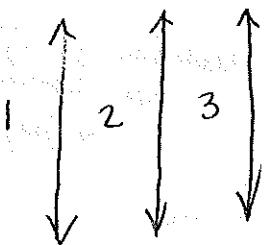Some Review Questions - Quiz #15 - LAST ONE

1. Cutting a plane along three lines breaks it into how many pieces? Give all possible
answers; for each, draw a sketch and number your regions.

(5's not possible, best you can do is keep
all lines but one parallel, making 6
regions.)

2. (a) Cutting a plane along four parallel lines breaks it into _____5_____ pieces.

 (b) Cutting a plane along n parallel lines breaks it into _____$n+1$_____ pieces.

3. (a) Cutting a plane along four concurrent lines breaks it into _____8_____ pieces.

 (b) Cutting a plane along n concurrent lines breaks it into _____$2n$_____ pieces.

4. How many concurrent lines would you need...

 (a) ...if you wanted to cut the plane into 18 regions?

 9 lines

 (b) What if you wanted to make 108 regions?

 54 lines

 (c) What if you wanted to make 107 regions?

 not possible

5. How many parallel lines would you need...

 (a) ...if you wanted to cut the plane into 18 regions?

 17 lines

 (b) What if you wanted to make 108 regions?

 107 lines

 (c) What if you wanted to make 107 regions?

 106 lines

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6. How should you arrange 7 lines to make...(answer with a word or verbal description)

(a) 8 regions?

parallel

(b) 9 regions?

not possible - least you can get w/o parallelism is from 6 parallel lines + one transversal: 14 regions.

(c) 29 regions? (answer with a word or verbal description, not a picture)

generic

(d) 28 regions? (answer with a word or verbal description, not a picture)

turn one generic to become parallel.

7. Can you cut the plane into 57 regions using generic lines? Justify your claim.

No. 10 lines is too few, but 11 lines is too many.

8. You need to cut a round cake into 30 slices at a party. What types of lines should you cut along, and how many cuts must you make?

concurrent   15 cuts

9. Lowe's will cut boards for you at 25 cents per cut. You need to make 6 pieces out of a board you bought. What types of lines should they cut along, and how many cuts will you pay for?

parallel   5 cuts