

Coordinate Geometry Proof Practice

(you may have to use a separate sheets of paper for this – you'll need lots of room for some)

Tips for doing Coordinate Geometry Proofs:

- **Organize** your work and **label everything**. Do not just perform calculations all over the place and leave your teacher to figuring out what is what (because we won't!).
- label your algebra statements clearly
 - so, for example, if you're going to prove the figure on the next page is a parallelogram by definition, one thing you'll need to do is find the slope of \overline{BC} . When you show that, write something like $\text{slope}\overline{BC} = \frac{3-0}{-4-8} = \frac{3}{-12} = \frac{-1}{4}$.
- you must refer to your calculations and provide a **summary/proof statement** when done. So, for example, if you have just finished finding 4 slopes and are now ready to say that it is a parallelogram, then you would finish with something like this:
 - $\overline{BC} \parallel \overline{AD}$ because both have slopes = $-1/4$
 - $\overline{AB} \parallel \overline{CD}$ because both have slopes = $4/1$
 - since both pairs of opp. sides are \parallel , it's a \square by def. ✓
- do **NOT** turn nice fractions like $\frac{3}{4}$ into decimals – reduce all fractions
- you must **show algebraic work** for things in your proofs – you can not just simply, for example, look at the graph paper and write down the pt. where it looks like 2 lines intersect – you must use some algebraic way to find the point

Here is some warm-up/review for the proofs on the following pages(feel free to skip this is your linear alg. is already solid):

- 1) What is the equation of the line that goes through (1, 3) and (5, 12)? Leave your answer in slope-intercept form.
- 2) What is the midpoint of (1, 3) and (5, 12)?
- 3) What is the distance between (1, 3) and (5, 12)?
- 4) What is the equation of the line that is \perp to the line in #1 and also goes through (0, -1)?
- 5) What is the equation of the line that is \perp to the line in #1 and also goes through (0, -1)?