

Year 9 Holiday Homework Term 4 2017

Name: _____ AIC ID: _____

Instructions:

- Answer ALL questions.
- There will be a validation test in Week 2 of Term 4

ACTIVITIES:

1. Learn to identify a linear equation.

Activity 1:

(a) Write at least four examples of linear equations. What makes these equations linear equations?

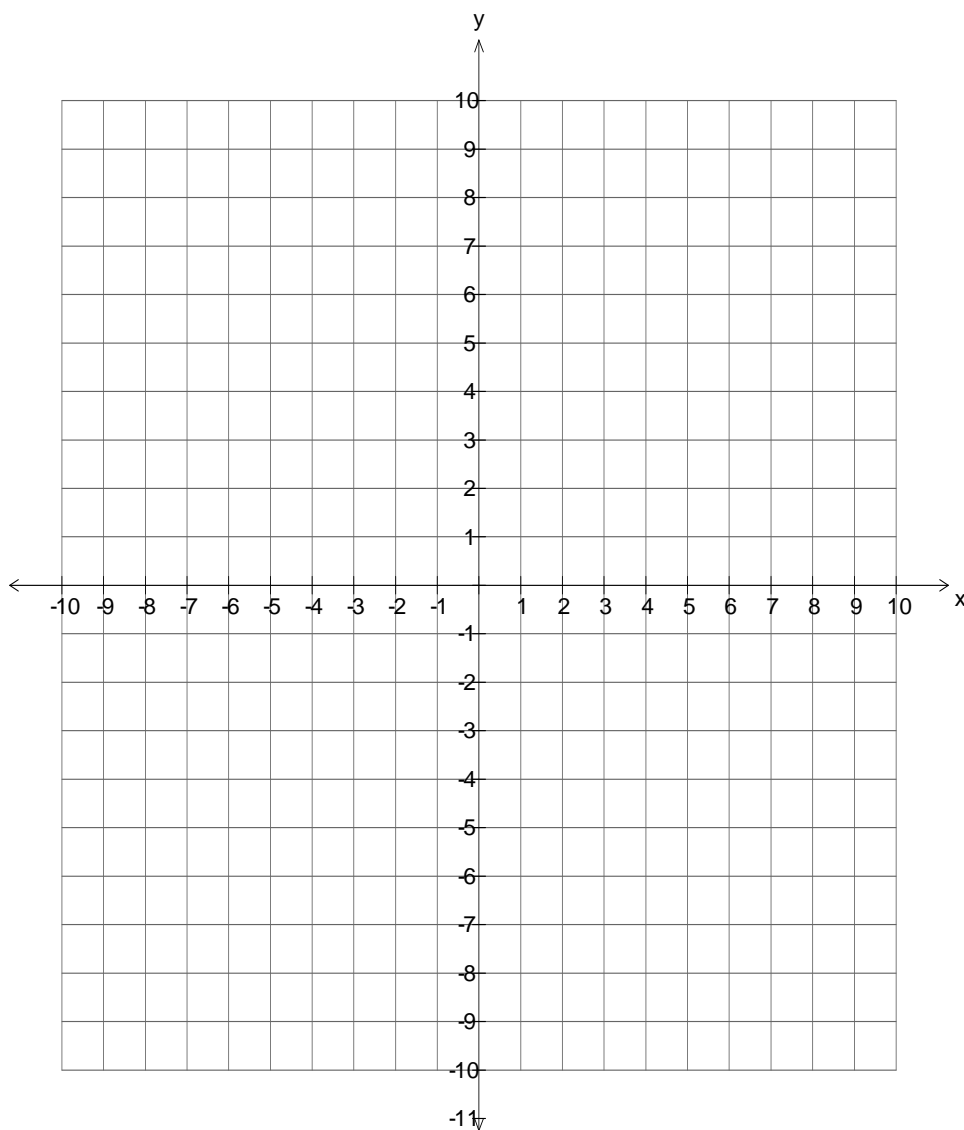
(b) Give an example of using the ' $y = mx + c$ ' test to identify linear equations.

(c) Some calculators show $y = ax + b$. What do 'a' and 'b' mean.

2. Learn to identify 'x' and 'y' intercepts

Activity 2:

- (a) What are 'x' and 'y' intercepts? Draw any straight line graph and identify the 'x' and 'y' intercepts. Write the coordinates of the 'x' and 'y' intercepts?



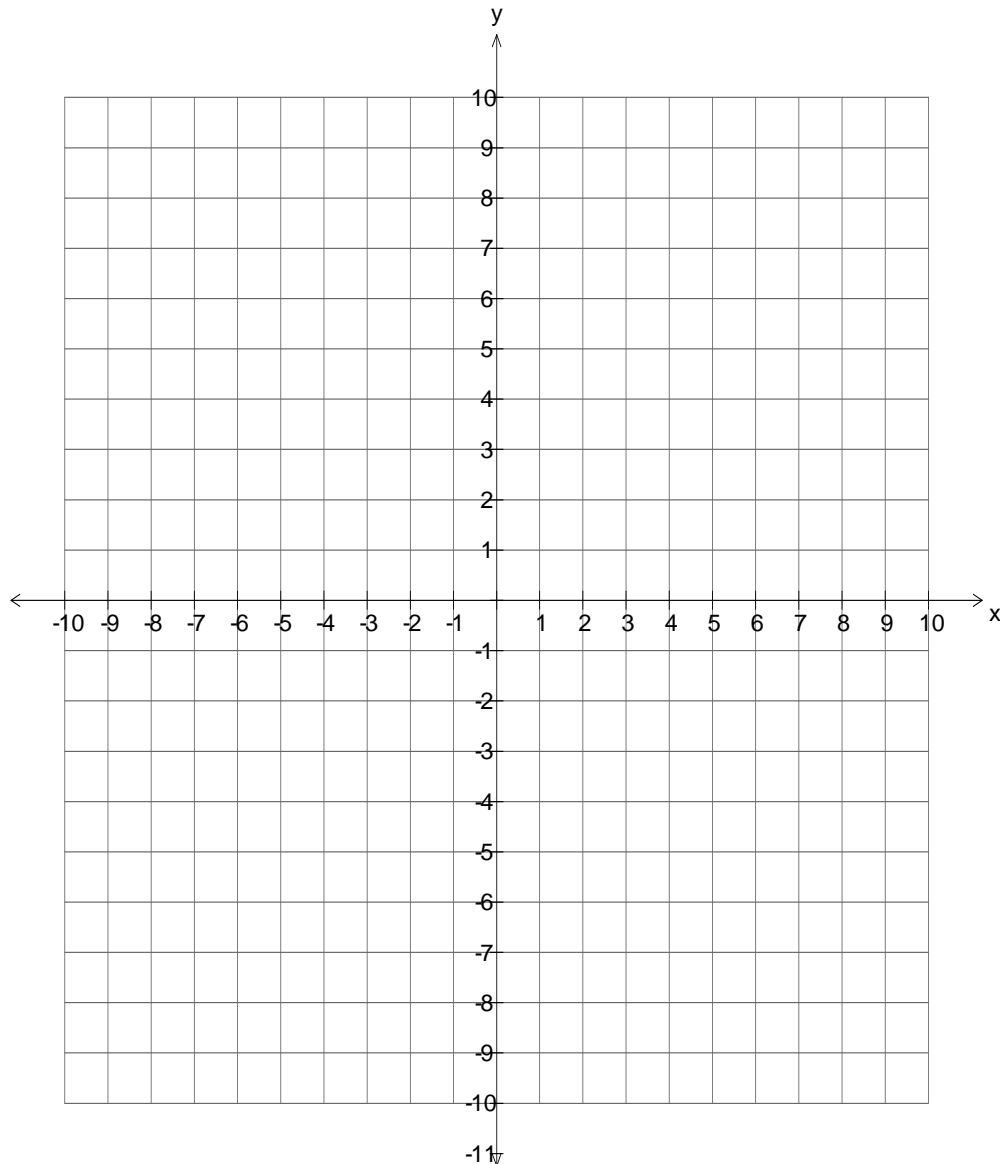
- (b) Does every linear graph have a 'x' and 'y' intercept? Can a line have 'x' intercept only? If yes, draw an example above, write the equation?

- (c) Can a line have 'y' intercept only? If yes, draw an example above, write the equation?
- (d) Can you identify 'x' and 'y' intercepts from an equation, without drawing the graph? If yes, give an example

3. Graphing lines

Activity 3 :

- (a) How would you graph $\frac{x}{3} + \frac{y}{4} = 1$? Draw the graph and write coordinates of the 'x' and 'y' intercepts of the line?

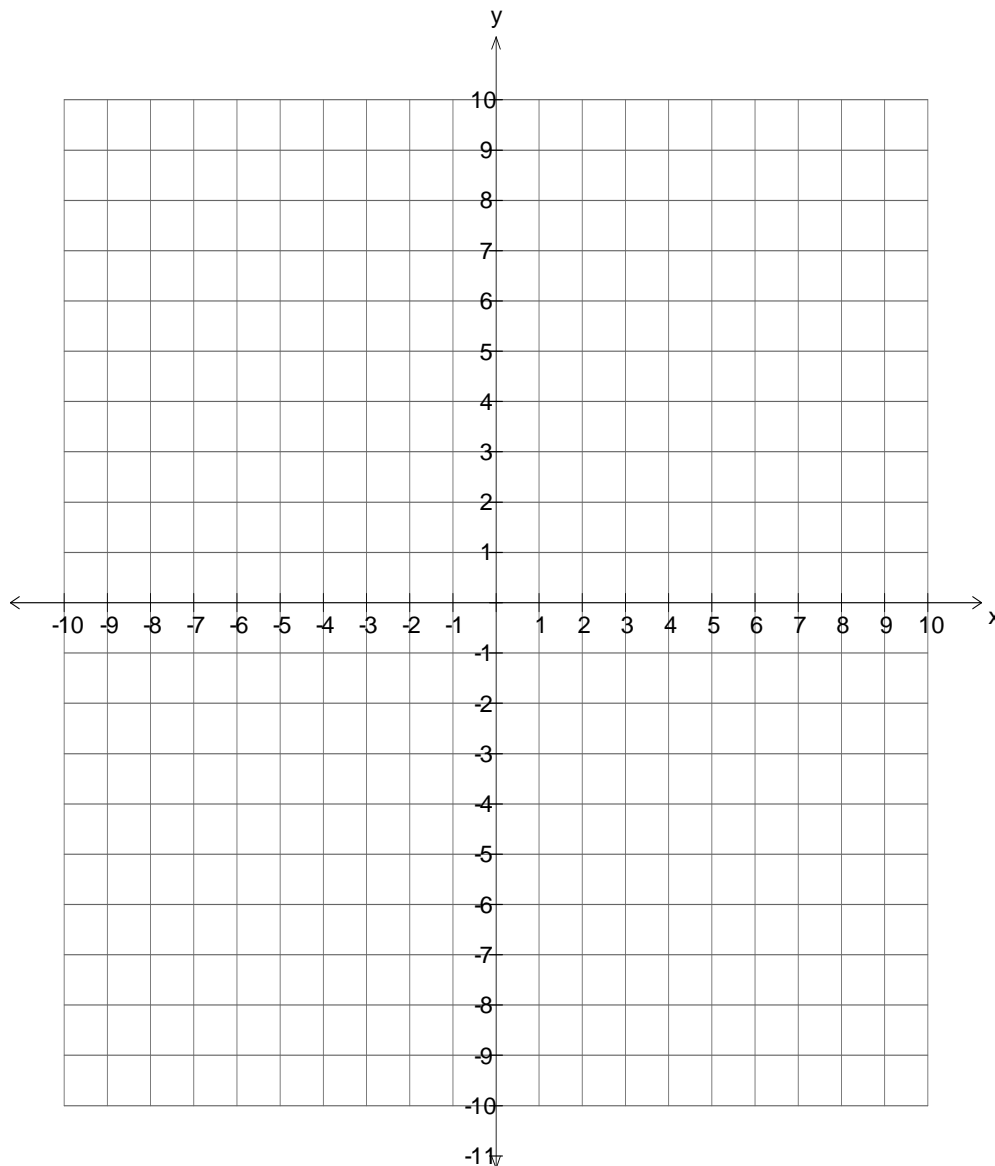


- (b) What relationship can you find between the 'x' and 'y' intercepts and the style in which the equation is written?
- (c) What is the gradient of the line?
- (d) What do you observe about the gradient and the style in which the equation is written?

- (e) Do you notice anything about the sign when calculating gradient? Find the gradient of $\frac{x}{2} - \frac{y}{7} = 1$ to confirm any observation.

Activity 4 :

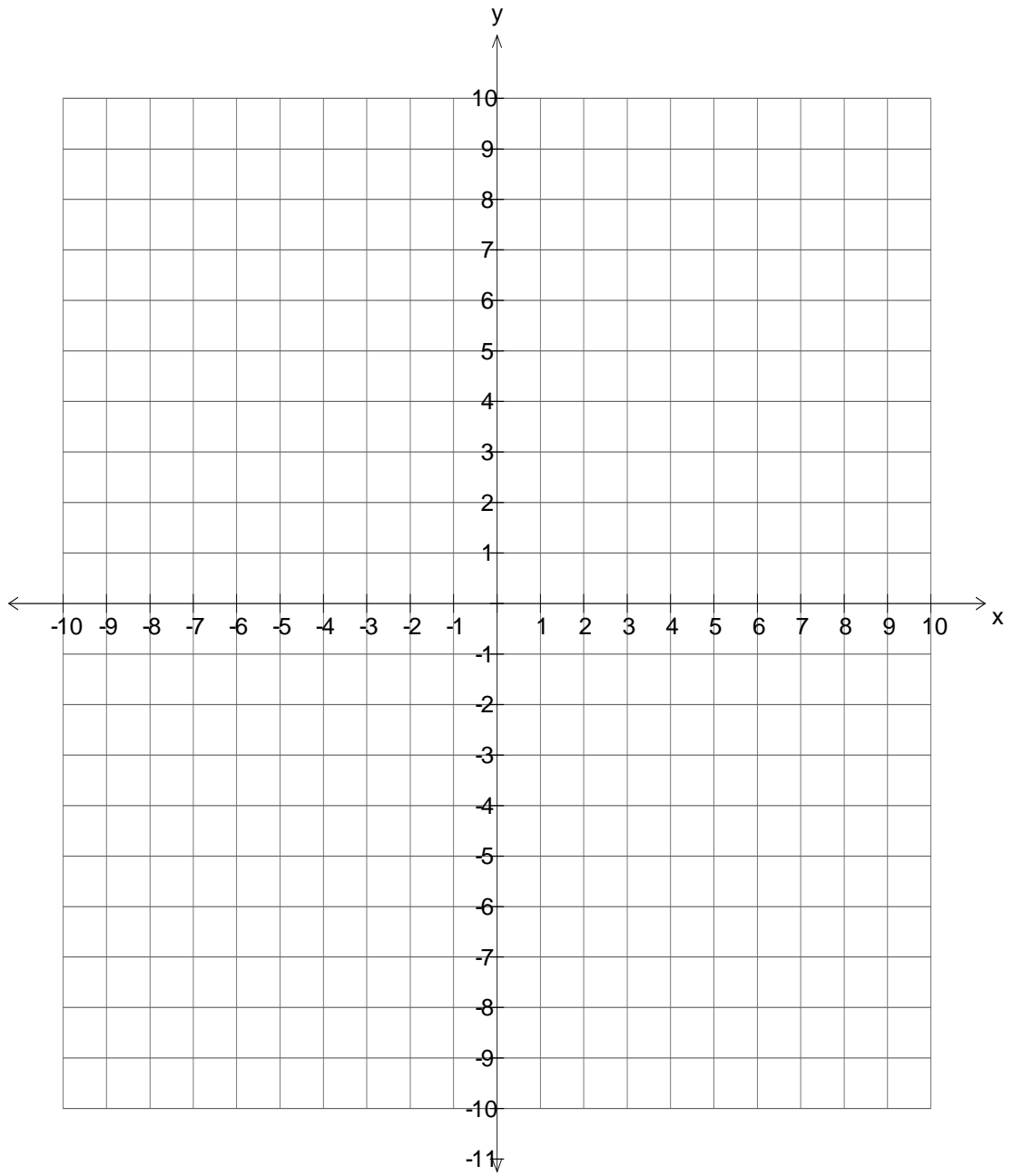
- (a) Rearrange the equation $12x + 8y = 24$ in the form $\frac{x}{a} + \frac{y}{b} = 1$? . (Hint: Divide every term by 24). Draw the line (you should easily be able to do this by identifying the intercepts).
- (b) Now consider the equation $8x + 12y = 24$. What did you notice about the co-efficients of 'x' and 'y' when compared to the equation in (a) above.
- (c) Draw the graph on the SAME AXIS, using the method above.



4. Graphical solution

Activity 5:

- (a) What is the meaning of a graphical solution?
- (b) Refer to the two graphs you have drawn in Activity 4. What is the graphical solution to the two graphs?
- (c) Also refer to the two equations written in the form of $\frac{x}{a} + \frac{y}{b} = 1$? What do you notice about the solution and the numbers used in the numerators and denominators of the equation?
- (d) Hence, can you predict a solution for $12x + 6y = 60$ and $6x + 12y = 60$



End of take-home section

