Grade 9

Assessment

Linear graphs – Inequalities – Systems of equations
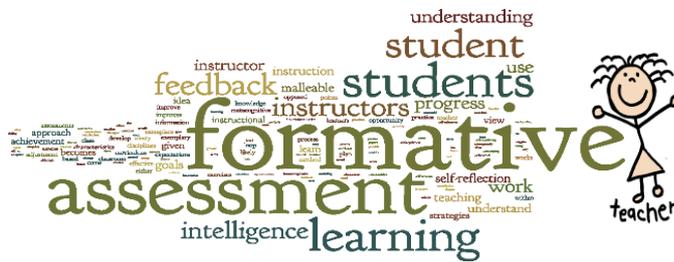
Linear graphs

Gradient

slope

A man is like a fraction whose numerator is what he is and whose denominator is what he thinks of himself. The larger the denominator the smaller the fraction.

QuotesIdeas.com
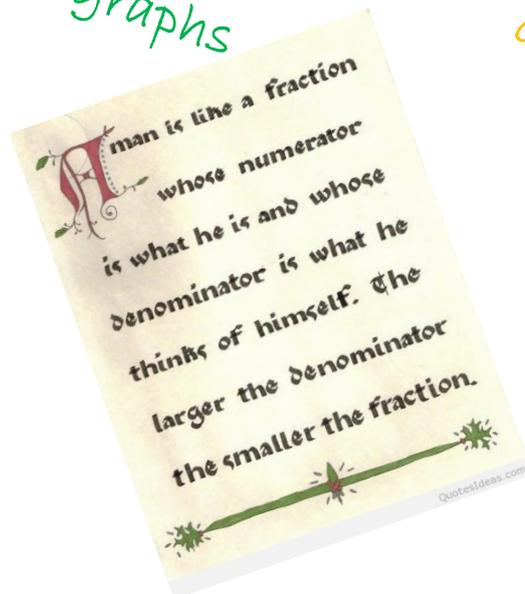
Name :

Date: /11/18

2018-2019

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures.

Part I – (True – False Questions)

1. Mark as True (**T**) or False(**F**) (5 marks)

   i.   The slope of the line y = 5 is undefined

   ii. The graph of $y = x^2 - x(x-4) + 5$
        is a straight line

   iii. The slope of the line: -2x = - y + 4 is 2

   iv. The slope of the line: -2y = -2x + 4 is 2

   v.   The slope of 2y-4 = 2(y-3x) + 8 is "0"

Part II – (Graph)

2. Find the equation of the straight line that has slope m = 4 and passes through the point (–1, –6).   (2 Marks)

3. i) Find the equation of the line that passes through the points A (–2, 4) and B(1, 2).   (3 Marks)

   ii) What are the coordinates of the midpoint of the segment AB? (3 Marks)

   iii) Calculate the distance AB giving the exact value.
                                                                    (3 Marks)

4. The point A has co-ordinates (–4, 6) and the point B has co-ordinates (7, –2). Calculate the length of the line AB.   (3 Marks)

5. What is the equation of the line that is:

   a. Parallel to the line 6x - 3y - 12 = 0 and passing through the point (-2, 5)?

   <mark>(3 Marks)</mark>

   b. Perpendicular to the line $\frac{1}{3}y + \frac{1}{6}x = 1$ and cutting the y-axis at 2.

   <mark>(4 Marks)</mark>

<p style="text-align:center; color:red">PART III – (Inequalities – Systems of equations)</p>

6. Solve the simultaneous equations. You must show all your working. <mark>(4 Marks)</mark>
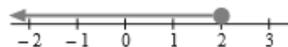
$$\begin{cases} 3x - 2y = 23 \\ -4x - y = -5 \end{cases}$$

7. Solve the simultaneous equations. You must show all your working.
   Give your answers correct to 1 decimal place or as fractions.   <mark>(4 Marks)</mark>

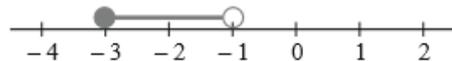$$\begin{cases} \dfrac{1}{2}x - 8y = 1 \\ x + 2y = \dfrac{13}{2} \end{cases}$$

8. Which of the following inequalities is represented by the diagram.

   <mark>(1 Mark)</mark>

   a. 2 ≥ -x
   b. -x ≤ 2
   c. x > 2
   d. $-\frac{1}{2}x$ ≥ -1

9. Which of the following is the set of solutions that is represented by the
   diagram: <mark>(1 Mark)</mark>

   a. x∈ (-3, -1]
   b. x∈ (-1, -3]
   c. x∈ [-3, -1)
   d. x∈ [-3, -1]

10. Solve the inequality. Write the set of solutions and depict it on the number
    line. Give your answer in 3 significant figures.
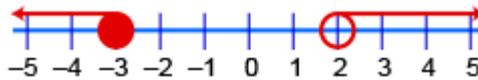
$$3n - 5 > 17 + 8n$$ <mark>(4 Marks)</mark>

11. Find the integer values of n that satisfy the inequality.

$$18 - 2n < 6n \leq 30 + n$$ <mark>(3 Marks)</mark>

12. Select the inequality statement that describes this graph. <mark>(2 Marks)</mark>

a) ◯ $-3 \leqslant x \leqslant 2$ b) ◯ $-3 < x < 2$

c) ◯ $-3 \leqslant x < 2$ d) ◯ $-3 < x \leqslant 2$

e) ◯ $x \leqslant -3$ or $x \geqslant 2$ f) ◯ $x < -3$ or $x > 2$

g) ◯ $x \leqslant -3$ or $x > 2$ h) ◯ $x < -3$ or $x \geqslant 2$

STAR QUESTIONS

A rectangle has a perimeter of 60 cm. If the length is reduced by 7 cm and the breadth is increased by 7 cm, the rectangle is made into a square. What are the dimensions of the original rectangle?

One side of a triangle is two thirds of the longest side. The shortest side is one half of the longest side.

The triangle is part of an advertising placard. The sum of the dimensions of the triangle must be at least 156 cm but not exceed 312 cm.

What is the range of possible lengths for the longest side?

Time to complete the test: **45 minutes**