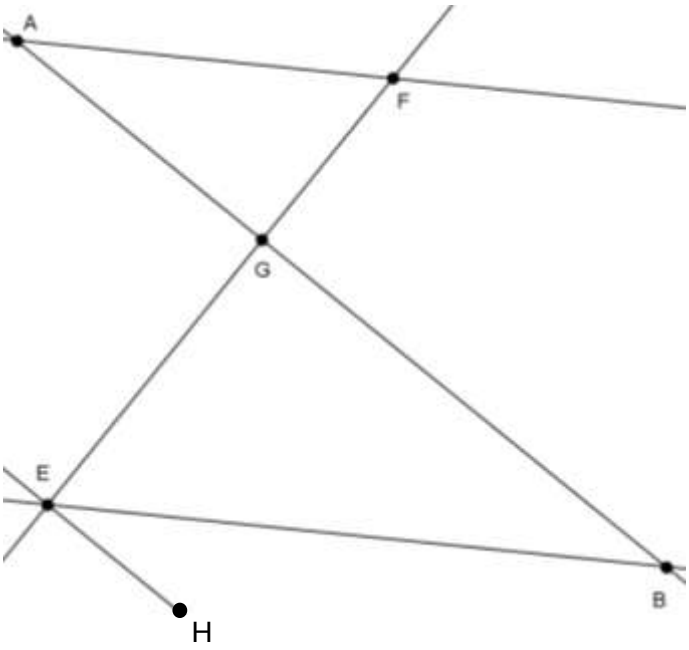
Worksheet 21: Term 3 Revision

Grade 10 Mathematics

1. Given below in the diagram, AF || EB, AB || EH and EG ⊥ AB.

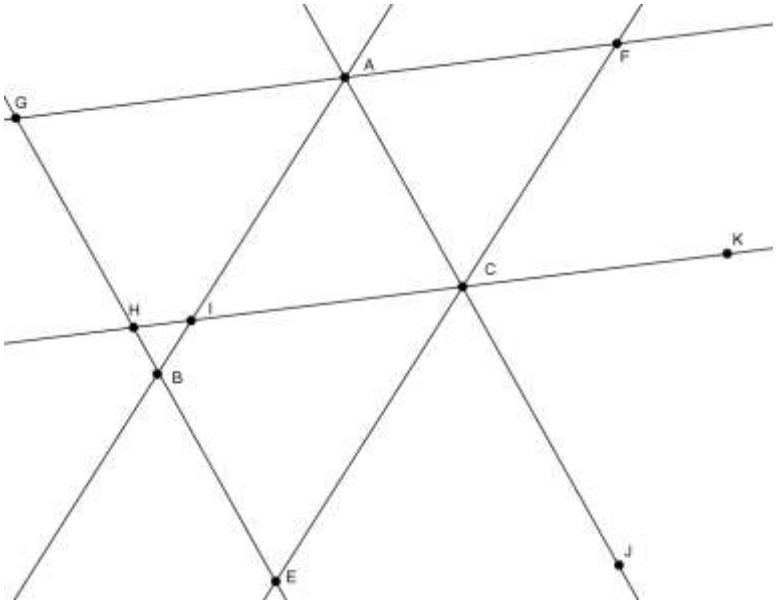


a) Are ΔAFG and ΔBEG similar? Show all your working out.

b) If point A is joined to point E in a straight line, and point B is joined to point F in a straight line, what kind of shape is AEBF? Show all your working out and give reasons.

c) If it is given that FB = EB, what kind of quadrilateral would AEBF be now?

2. Given below in the diagram FG ||HK, AB || EF and GE || AJ.



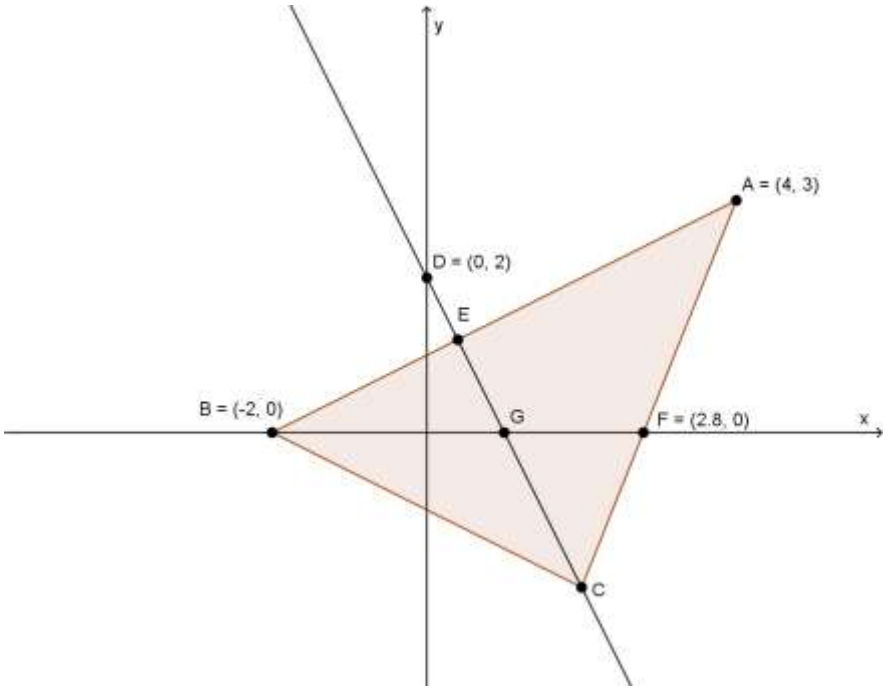
a) Prove that ΔACF is congruent with ΔAIC. Give all your reasons and show all your working out.

b) Hence, what kind of quadrilateral is AFCI? Give all reasons.

c) If FK was joined by a line parallel AJ, prove that ΔCFK is congruent with ΔACI.

d) Hence, prove that AFKI is a trapezium.

3. Given below is a diagram of ΔABC. DC ⊥ AB.



a) Find the equation of the line DC.

b) Find E.

c) Is E the midpoint of AB? Show all your working out.

d) Find the equation AC.

e) Find C.

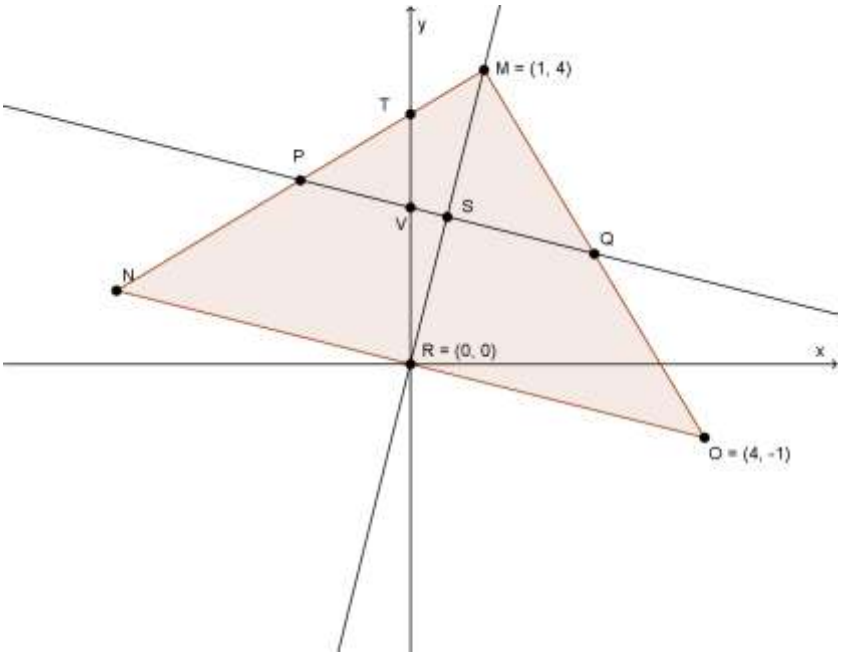
f) If EF is joined, determine whether EF is parallel to BC.

g) What kind of triangle is ΔABC? Show all your working out.

h) Find the midpoint of BC, called H and indicate on your diagram.

i) Does the line AH, pass through the point G? Show all your working out.

4. Given below in the diagram is ΔMNO with PQ || NO an MR ⊥ NO. P is the midpoint of MN, R is the midpoint of NO and Q is the midpoint of MO.



a) . Find N

b) . Find P and Q

c) Is S the midpoint of MR?

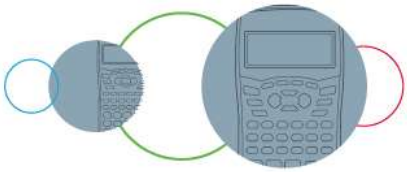
d) Determine the area of ΔMNO.

e) Is MN ⊥ MO? Show both methods of proof.

f) Use analytical geometry to prove the midpoint theorem in Euclidean geometry.

g) If a straight line was drawn through PR, would it be parallel to MO?

h) If a straight line is also drawn through QR, what kind of shape is MPRQ?



5. Complete the table by finding the missing values if these values are calculated for simple interest. Show all your working out.

Final Amount	Principal Amount	Interest	Number of Years
R500 000		4.9%	7 years
	67 900	12%	6.5 years
137 700	47 520		15 years
34 560	19 740	7%	
	18 200	15%	9 years

6. Complete the table by finding the missing values if these values are calculated for compound interest. Show all your working out.

Final Amount	Principal Amount	Interest	Number of Years
	142 720	2.5%	70
72 000		4.6%	24
36 100	22 680		16
948 480	270 160		5
	203 280	7%	2

7. Look at the following two adverts:

Fridge A = LG
R12 499.00
Deposit = 10%
Contract Term
= 30 months
Contract Total
= R19 502.66
House and Home

Fridge B = Defy
R11 299.00
Deposit = 8%
Contract Term
= 30 months
Contract Total
= R17 962.80
OK Furniture

a) Determine the deposit you would have to pay for each fridge.

b) Determine the monthly installment for each fridge.

c) Which store charges a lower interest rate?

d) Which fridge would you purchase and why?

8. A small country town has a population of 96 000 people in 2000.

   a) If the town had 249 600 people in 2015, at what rate did the town grow?

   b) If the town grows at a rate of 13% per year, how many people will the town have in 2030?

9. Christine is travelling to Switzerland and England for her Christmas holiday break. The exchange rates for these two countries are given as:

   R1 = 0.0862 CHF (Swiss Franc)

   1 GBP = R17.60 (Great British Pound)

   a) Determine how many GBP's you would get for R10.

   b) If Christine has saved R6000, how many Swiss Francs will she be able to buy?

   c) Christine spends 312 CHF, how many Rands did she spend?

   d) How many GBP's will Christine have left for England?

   e) Christine spends 120 GBP, how much money does Christine come back to South Africa with (in Rands)?

10. Wanda has been keeping track of the number of Calories she eats every day as part of her healthy eating plan over two weeks. These are her totals:

1 780	2 680	3 685	1 048	1 244	1 780	1800
1 650	1 900	1 500	1 370	1 550	2 000	1400

   a) On which day did Wanda cheat on her diet?

   b) What is the range of calories that Wanda ate over the two weeks?

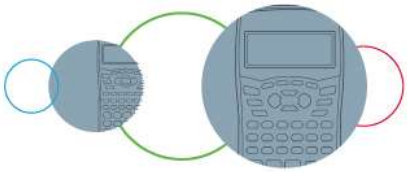
   c) What was Wanda's average calorie consumption?

   d) What was Wanda's median and mode for the two weeks of data?

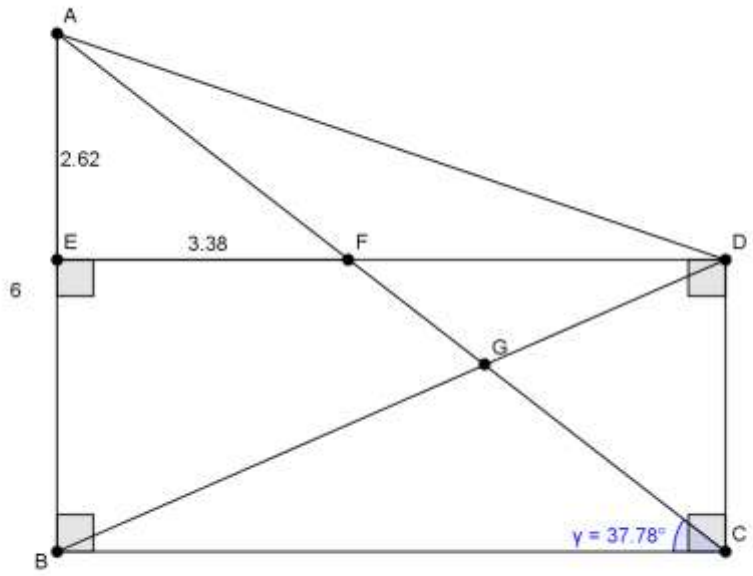
   e) Give the 5 number summary and draw a box-and-whisker plot for the data.

   f) From the box-and-whisker plot, what can you say about Wanda's eating habits?

   g) Find the 60^{th} percentile of the data.



11. Given below in the diagram EB ⊥BC, DC ⊥ BC and ED⊥ DC.



a) Find the length of BC.

b) Determine the length of AF.

c) Determine the value $A\hat{F}E$

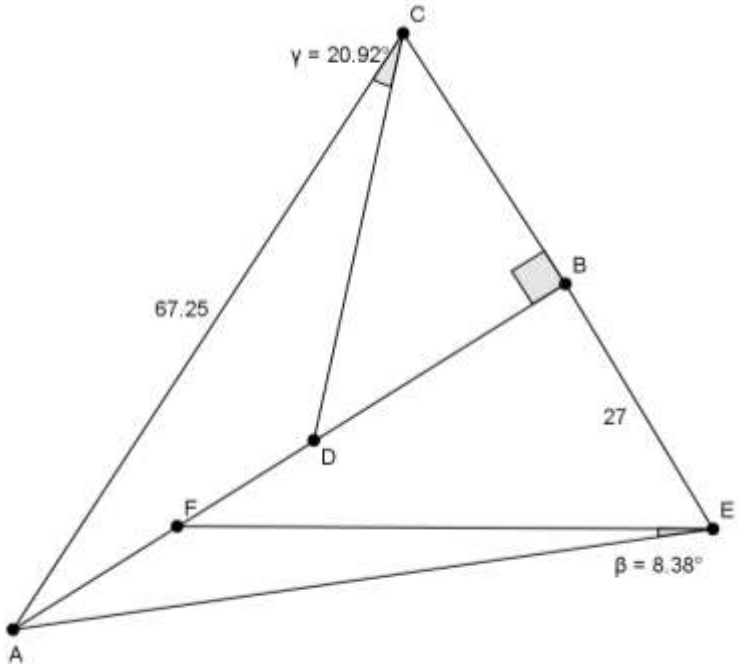
d) Determine the length of AD.

e) Determine the value of $A\hat{D}E$.

f) Determine the value of $D\hat{A}F$.

g) Determine the value of FC.

12. Give the triangle below with AB ⊥ CE and AB = 61.58 units. The other measurements are given on the diagram.



a) Determine the value of $A\hat{C}B$.

b) Determine the length of CB.

c) Find the length of DB.

d) Determine the length of FB.

e) Hence, or otherwise, find the length of FD and AF.

f) Find the area of ΔACE.

g) What kind of triangle is ΔACE? gh