Year 10 Higher learn sheet: March Assessment

Year 10 Higher topics to learn

Basic probability	Angles in parallel lines	Using a calculator
Enlargement	Money problem solving	Value for money
Simplifying algebra	Ratio	Frequency polygon
Loci	Circumference of circle	Pythagoras
Bearings	Estimating the mean	Indices, standard form
Density	y=mx+c	Quartiles
Trigonometry	Algebraic proof	Similar shapes
Reverse %	Area of a triangle	Upper & lower bounds
Quadratic formula	Histograms	Vectors
Equation of a circle		

Practise these revision questions:

1. A plane flies on a bearing of 110º from A to B. What bearing must it fly back on to get from B toA?

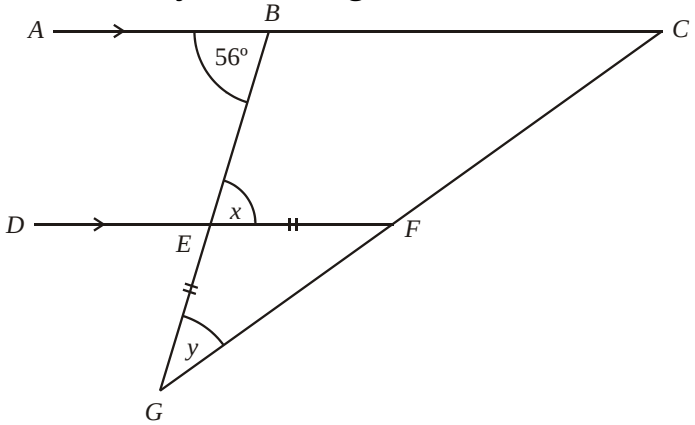
2. Find the circumference of a circle of radius 8 cm giving your answer to 3 significant figures.

3. Calculate 20^5 giving your answer in standard form.

4. I bought a TV in a sale for £391 after it had 15% off. What was the original price of the TV?

5. Solve $x^2 + 5x - 11 = 0$
Give your answers to 3s.f.

6. Find the size of angles x and y, giving reasons for you working out.



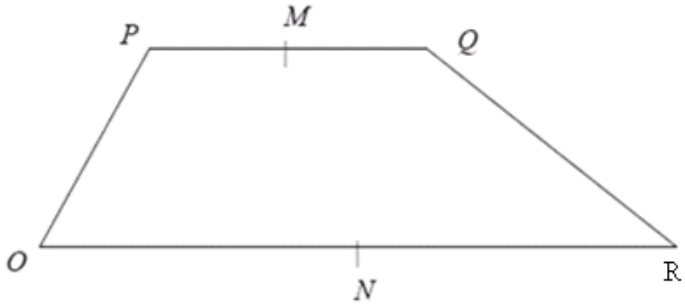
7. A is at the point (2,7) and B is at (7, 15)
Work out the length of AB to 1 d.p.

8. Liquid A has a density of 0.4 g/cm^3.
Liquid B has a density of 0.6 g/cm^3.
1 litre of liquid A and 500cm^3 of liquid B are mixed to make liquid C.
Work out the mass of liquid C.

9. Calculate an estimate of the mean mark from the table.

mark	frequency
20-24	8
25-29	2
30-39	6
40-50	4

10. In the trapezium, PQ is parallel to OR.



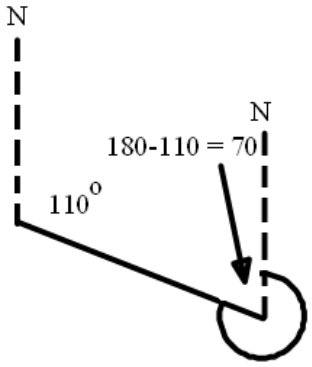
$\overrightarrow{OP} = 2\mathbf{b}$ $\overrightarrow{PQ} = 2\mathbf{a}$ $\overrightarrow{OR} = 6\mathbf{a}$

M is the midpoint of PQ and N is the midpoint of OR.
Find the vector $\overrightarrow{MN}$ in terms of **a** and **b**.

11. The area of a rectangle is 60cm^2 to the nearest whole number. The width is 10cm to the nearest centimetre. Calculate the lower bound for the length of the rectangle to 2dp.

Answers to practice questions:

1. Bearing = 360 – 70 = **<u>290º</u>**



2. $C = \pi d$

radius = 8cm , diameter = 2 × radius = 16cm

$C = \pi \times 16$ = **<u>50.3 cm</u>**

3. $20^5 = 3200000$ = **3.2×10^6**

4. 15% off leaves 85%

85% = £391

Original = 100% = $\frac{391}{85} \times 100$ = **<u>£460</u>**

5. $x^2 + 5x - 11 = 0$ $\quad ax^2 + bx + c = 0$

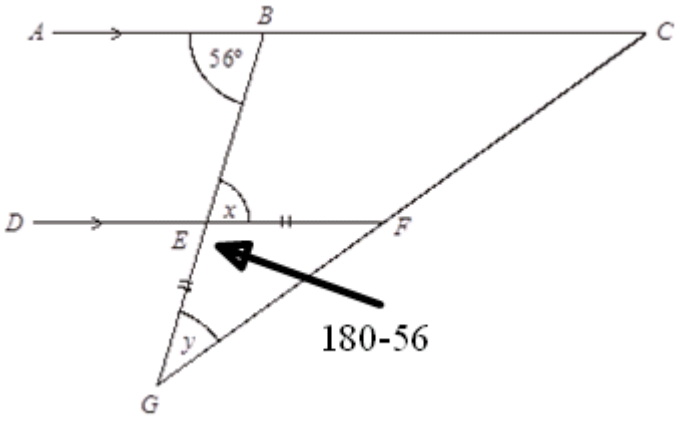
$a = 1$, $b = 5$, $c = -11$

using $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{5 \pm \sqrt{5^2-4\times1\times-11}}{2\times1} = \frac{5+\sqrt{69}}{2}$ or $\frac{5-\sqrt{69}}{2}$

= **<u>6.65</u>** or **<u>-1.65</u>**

6.

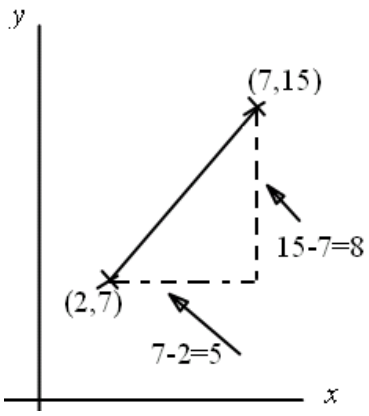


x = 56º , alternate angles are equal

angle GEF = 124º , angles on a straight line add up to 180º

y = (180-124)÷2 **<u>= 28º</u>** , angles in a triangle add up to 180º and the base angles of an isosceles triangle are equal.

7.



Using Pythagoras,

$AB^2 = 5^2 + 8^2$

$= 25 + 64$

$= 89$

$AB = \sqrt{89}$

<u>= 9.4 cm</u>

8. 1 litre = 1000 cm^3

Density = mass ÷ volume

Mass of A = 0.4 × 1000 = 400

Mass of B = 0.6 × 500 = 300

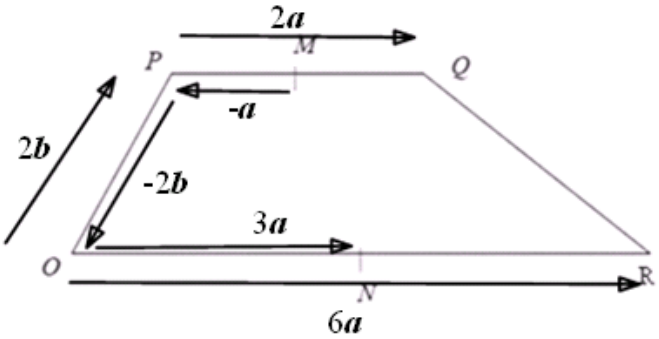
Total mass of C = 400 + 300 = **<u>700 g</u>**

9.

mark	frequency	middle	f × Mid
20-24	8	22	176
25-29	2	27	54
30-39	6	34.5	207
40-50	4	45	180
total	20		617

Mean = 617 ÷ 20 = **<u>30.85</u>**

10.



$\overrightarrow{MN} = \overrightarrow{MP} + \overrightarrow{PO} + \overrightarrow{ON}$

$= -\boldsymbol{a} + -2\boldsymbol{b} + 3\boldsymbol{a}$ **<u>$= 2\boldsymbol{a} - 2\boldsymbol{b}$</u>**

11.

	Lower	Upper
Area (60)	59.5	60.5
Width (10)	9.5	10.5

Smallest answer = (smallest) ÷ (biggest)

Lower length = lower area ÷ upper width

= 59.5 ÷ 10.5

<u>= 5.67 cm</u> to 2dp