Are you ready for A Level Maths?

Take this self-assessment quiz to see if you're ready

Name: [   ]   Score: [/14]

How complete this assessment:

- Do it in test conditions to see how much you know,
- Show all possible workings - this non-negotiable in A Level Maths
- Keep a positive mindset (even if it's hard, you will be able to easily revise and learn it again!)
- The answers are HERE, once you've finished mark your answers and give yourself a score to see how ready you are.

Question 1

Expand and simplify

$$(2x - 3)(4x + 5)$$

$8x^2 + 10x - 12x - 15$

$8x^2 - 2x - 15$

Question 2

Expand and simplify

$$(x-2)(2x+1)(x+2)$$

$$(x-2)(2x^2 + 4x + 1x + 2)$$

$$(x-2)(2x^2 + 5x + 2)$$

$$2x^3 + 5x^2 + 2x - 4x^2 - 10x - 4$$

$$\boxed{2x^3 + x^2 - 8x - 4}$$

Question 3

Factorise

$$2x^2 + x - 6$$

$$2x^2 + 4x - 3x - 6$$

$$2x(x+2) - 3(x+2)$$

$$\boxed{(2x-3)(x+2)}$$

Question 4

Rearrange to make x the subject.

$$y = \frac{x-2}{4x-5}$$

$$4xy - 5y = x - 2$$

$$4xy - x - 5y = -2$$

$$4xy - x = 5y - 2$$

$$x(4y-1) = 5y - 2$$

$$\boxed{x = \frac{5y-2}{4y-1}} \quad \text{OR} \quad \boxed{x = \frac{2-5y}{1-4y}}$$

Question 5

Simplify fully

$$2 \times 3x \div {}^3/_4$$

$$6x \div \frac{3}{4}$$

$$6x \times \frac{4}{3}$$

$$\frac{24x}{3}$$

$$\boxed{8x}$$

Question 6

Simplify fully

$$4 \times \left(\frac{3x}{2}\right)^2 \times 2$$

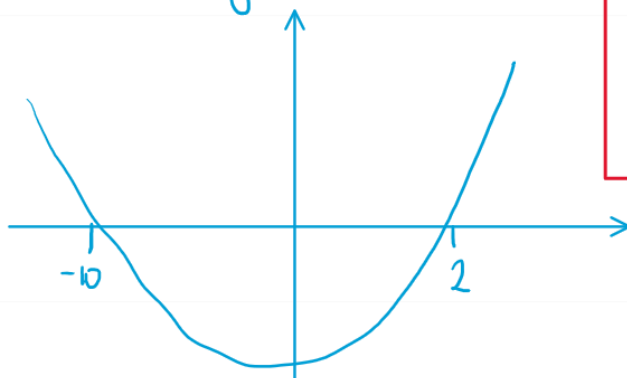$$4 \times \frac{9x^2}{4} \times 2$$

$$\frac{4 \times 18x^2}{4}$$

$$\boxed{18x^2}$$

Question 7

Solve the following inequality

$$x^2 + 8x - 20 > 0$$

$(x+10)(x-2) = 0$

sketch $\quad y = x^2 + 8x - 20$

$$\boxed{\begin{array}{l} x > 2 \\ x < -10 \end{array}}$$

Question 8

Complete the square

$$x^2 + 8x - 2$$

$$(x+4)^2 - 4^2 - 2$$

$$\boxed{(x+4)^2 - 18}$$

Question 9

Solve by completing the square

$$x^2 - 3 - 12 = 0$$

$$\left(x - \frac{3}{2}\right)^2 - \frac{3}{2}^2 - 12 = 0$$

$$\left(x - \frac{3}{2}\right)^2 = \frac{3}{2}^2 + 12$$

$$\left(x - \frac{3}{2}\right)^2 = \frac{57}{4}$$

$$x - \frac{3}{2} = \pm\sqrt{\frac{54}{4}}$$

$$\frac{3\sqrt{6}}{2}$$

$$\boxed{x = \frac{3}{2} \pm \frac{3\sqrt{6}}{2}}$$

Question 10

Write down the coordinates of the minimum point of the following curve:

$$y = x^2 + 6x - 2$$

$$y = (x+3)^2 - 3^2 - 2$$

$$y = (x+3)^2 - 11$$

Min point $(-3, -11)$

Question 11

Sketch (not plot) the following graphs labelling clearly where it crosses the coordinate axes and the coordinates of where they intersect.
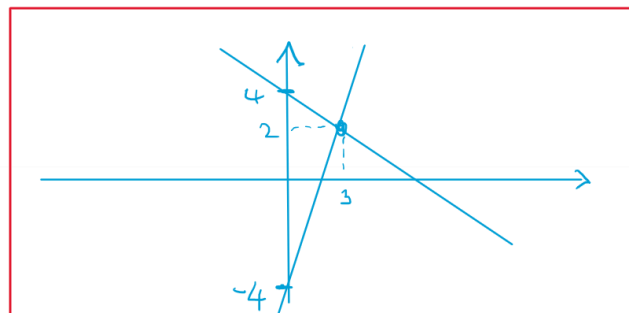
$$y = 4 - \frac{1}{2}x$$

$$y = \frac{7}{2}x - 4$$

Point of intersection

$$\frac{7}{2}x - 4 = 4 - \frac{1}{2}x$$

$$4x = 8$$

$$x = 2$$

$(2,3)$

$$y = 4 - \frac{1}{2}(2)$$

$$= 3$$

Question 12

Find the gradient of the line connecting the points (2, 7) and (-4, 5)

$$m = \frac{7-5}{2--4}$$

$$= \frac{2}{6}$$

$$= \boxed{\frac{1}{3}}$$

Question 13

State, giving clear reasons and algebraic working, whether the following lines are parallel, perpendicular or neither.

$$2y = 5x - 3$$

$$y = -\frac{2}{5}x + \frac{7}{3}$$
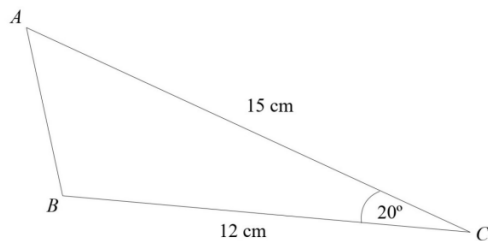
$y = \frac{5}{2}x - 3$ gradient $= \frac{5}{2}$

$y = -\frac{2}{5}x + \frac{7}{3}$ gradient $= \frac{-2}{5}$

The lines are perpendicular because their gradients are negative reciprocals of each other.

All of this is needed to mark this as correct.

Question 14

Calculate the length of AB

$c^2 = a^2 + b^2 - 2(a)(b) \sin C$

$c^2 = 12^2 + 15^2 - 2(12)(15) \sin 20$

$c = \sqrt{307.4363242}$

$c = 17.5 \text{cm}$

CHECK MY ANSWERS

Click above to check your answers and give yourself
a score out of 14.

Well done if you're ready!

If not though, **don't worry** you just need to spend a bit
of time brushing up and you'll be ready in no time.