Maths Key Skills **Stage 11: Skill Check 12**

Name: ..... Date: ..... Class/Group: .....

A: Number & Algebra

1. Write $\sqrt{48}$ in the form k$\sqrt{3}$ *11:1*

2. Rationalise the denominator & simplify: *11:2*

$$\frac{5}{2\sqrt{8}}$$

3. The area of a rectangle is 20m^2 (to the nearest 10) and its length is 4.82m (to the nearest cm) Work out minimum width.(2dp) *11:3*

4. Simplify the following fraction: *11:4*

$$\frac{x^2-9}{x^2+3x} \div \frac{x^2-6x+9}{5x}$$

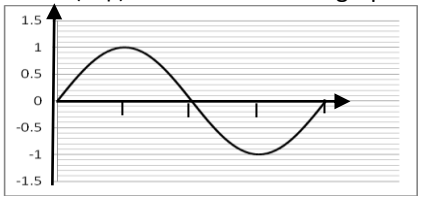
5. Solve: *11:5*

$$\frac{x+3}{2} + \frac{x-5}{3} = x^2$$

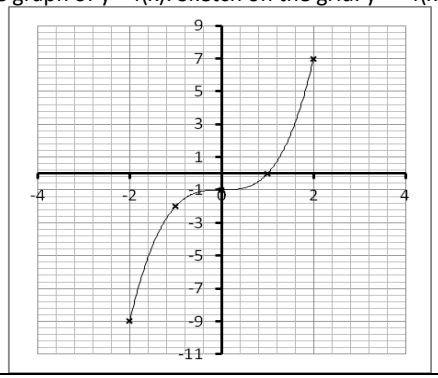
B: Algebra, Proportion, Geometry & Measure

11. Make (**y**) the new subject of : $\frac{y}{y-t} = \frac{m}{n}$ *11:12*

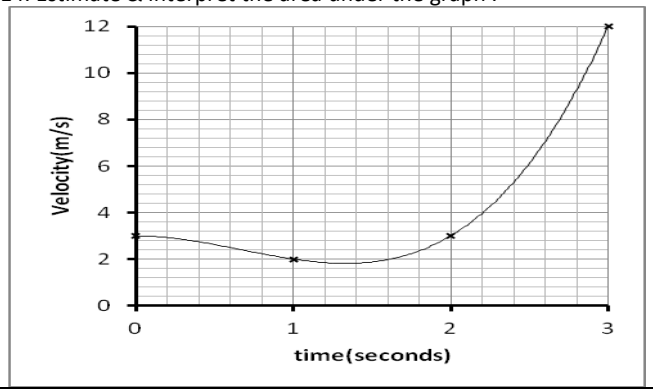
12. One solution for **sinx = -0.8**(1dp) is x =234^0. Use the graph to find another solution. *11:14*



13. This is the graph of y = f(x). Sketch on the grid: y = - f(x) *11:15*



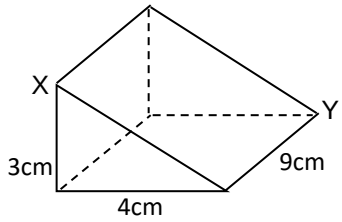
14. Estimate & interpret the area under the graph . *11:16*



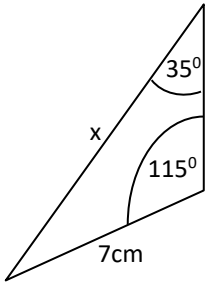
15. Write down the equation of the tangent at (2,2) on the circle with centre (-4,-8) *11:18*

C: Geometry & Measure & Statistics

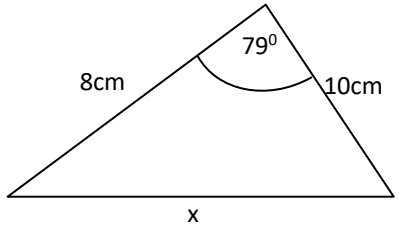
21. Work out the angle between XY and the base. (correct to 3sf) *11:26*



22. Find the side 'x'? (1dp) *11:27*



23. Find the side 'x'? (3sf) *11:28*



6. If f(x) = 7-3x and g(x) = x^2, evaluate:
g(f(5))

11:7

7. Find the turning point of:
$y = x^2 + 8x + 13$

11:8

8. Solve by completing the square: $x^2 - 5x + 1.25 = 0$
(Write down the EXACT values)

11:9

9. To solve: **$2x^2 + 5x = 10$** by formula. Give answers in surd form.

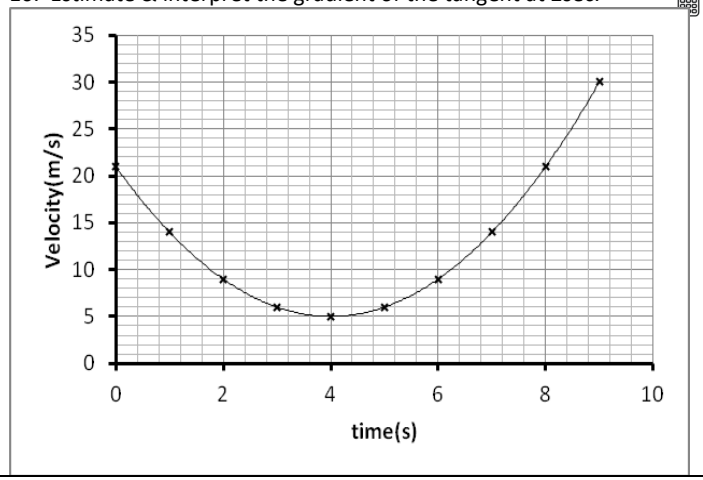
11:10

$\frac{\square \pm \sqrt{\square}}{\square}$

10. Write down the solution set for: $(x-3)(x-7) \leq 0$

11:11

16. Estimate & interpret the gradient of the tangent at 2sec.



11:20

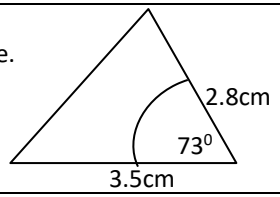
17. $x^2 - 5x - 8 = 0$ can be solved using the iteration formula:

$$x_{n+1} = \frac{x_n^2 - 8}{5}$$

Correct to 2dp
Start with **$x_1 = -2$** & work out an approximation for x by finding **x_5**

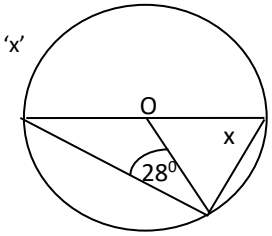
11:21

18. Work out the area of the triangle. (Correct to 2sf)



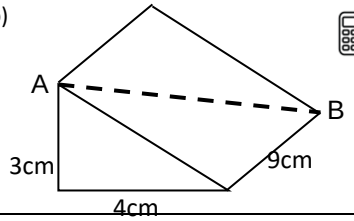
11:22

19. O is the centre.
Find the size of angle 'x'



11:23

20. Work out the length AB.(1dp)



11:24

24.

$\overrightarrow{OA} = \frac{1}{2}(\mathbf{b} - 2\mathbf{a})$

$\overrightarrow{OB} = 3\mathbf{a} + \mathbf{b}$

Show that $\overrightarrow{AB}$ can be express as ½(8a + b)

11:29

25. Complete the table for frequency density:

Scores	Frequency	Frequency density
$0 < n \leq 20$	18	
$30 < n \leq 40$	24	
$40 < n \leq 60$	32	
$50 < n \leq 70$	27	
$70 < n \leq 100$	9	

11:30

Total (A)		Total (B)		Total (C)	
Test Total (A+B+C)		R (0-9)	Y (10-19)	G (20-25)	