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

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

A: Number & Algebra

1. Write **4√27** in the form k√3 *11:1*

2. Expand & simplify: *11:2*

$$(1 - \sqrt{7})^2$$

3. If x=5.82 (2dp) & y=1.4)(1dp) Work out maximum value of **x - y** *11:3*

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

$$\frac{x^2+4x-5}{2x} \times \frac{6x^2}{x^2-1}$$

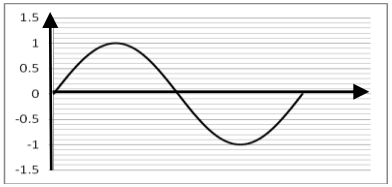
5. Solve: *11:5*

$$\frac{5}{x} + \frac{3}{x+1} = \frac{3}{2}$$

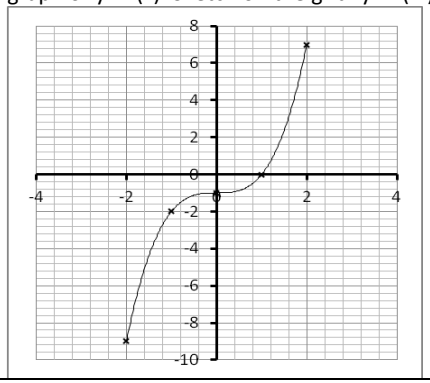
B: Algebra, Proportion, Geometry & Measure

11. Make (**y**) the new subject of : $y - 5 = \frac{3y-4}{w}$ *11:12*

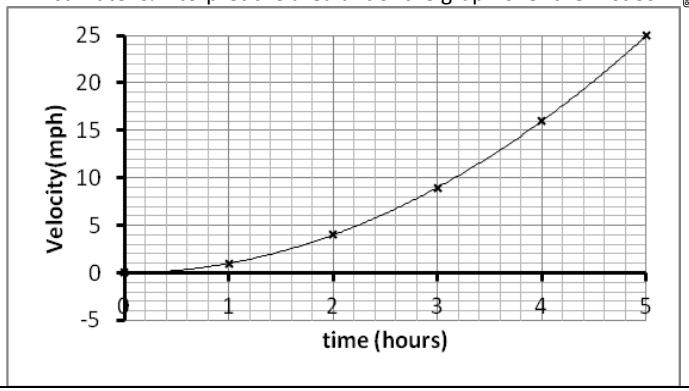
12. One solution for **sinx = 0.8**(1dp) is x =54^0. Use the graph to find another solution. *11:14*



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



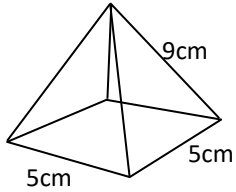
14. Estimate & interpret the area under the graph over the first 3s *11:16*



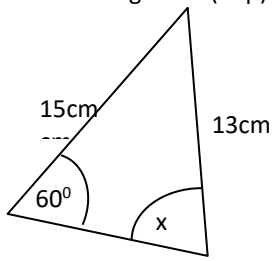
15. Write down the equation of the tangent at (5,-2) on the circle with centre (1,1) *11:18*

C: Geometry & Measure & Statistics

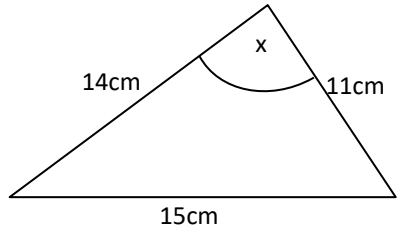
21. Work out the angle between the slant edge & the square base. (correct to 3sf) *11:26*



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



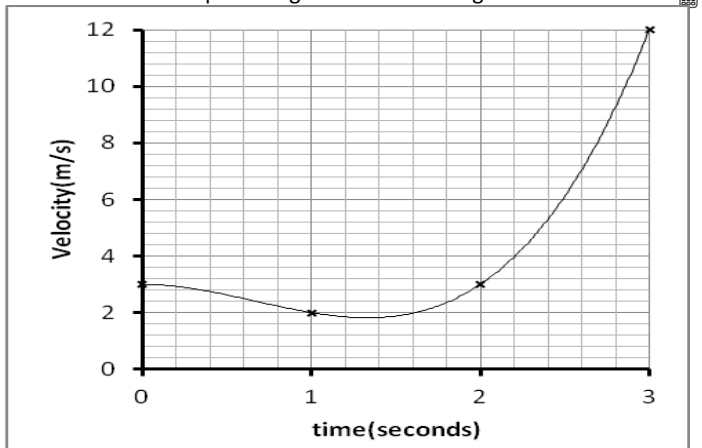
23. Find the angle 'x'? (2sf) *11:28*



6. If $f(x) = 2x^2 - 3$, work out: $f^{-1}(x)$ — *11:7*

7. Find the turning point of: $y = x^2 - 6x - 9$ — *11:8*

16. Estimate & interpret the gradient of the tangent at 2sec. — *11:20*



24. — *11:29*

$\overrightarrow{OA} = 2\mathbf{a} + \mathbf{b}$

$\overrightarrow{OB} = 3\mathbf{a} + 2\mathbf{b}$

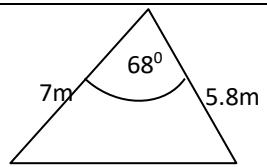
Express & simplify $\overrightarrow{AB}$ in terms of **a** and **b**

8. Solve by completing the square: $x^2 - 2x - 9 = 0$ (Write down the EXACT values) — *11:9*

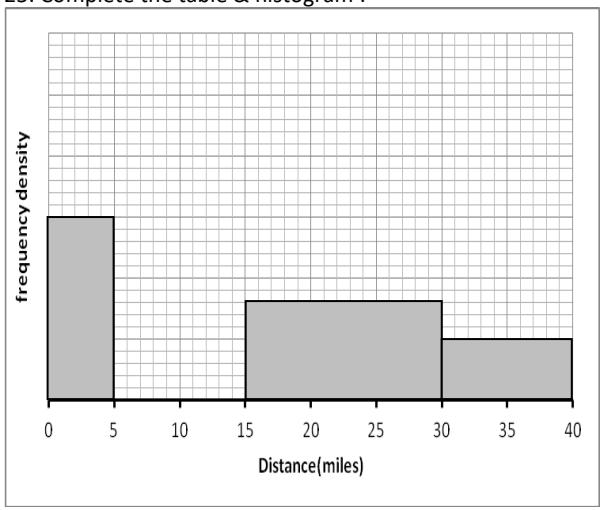
17. $x^2 - 5x - 8 = 0$ can be solved using the iteration formula: $x_{n+1} = \sqrt{5x_n + 8}$ — *11:21*

Start with $\mathbf{x_1 = 6}$ & work out an approximation for x by finding $\mathbf{x_5}$ Correct to 2dp

18. Work out the area of the triangle. (Correct to 2sf) — *11:22*



25. Complete the table & histogram : — *11:30*

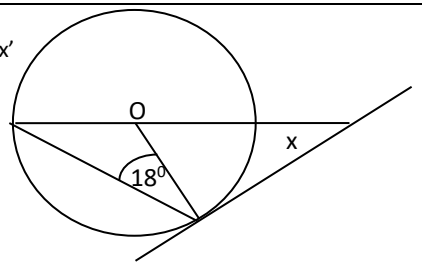


Distance	Frequency
$0 < d \leq 5$	15
$5 < d \leq 15$	34
$15 < d \leq 30$	
$30 < d \leq 40$	

9. To solve: $\mathbf{3x = 2x^2 - 4}$ by formula. Give answers in surd form. — *11:10*

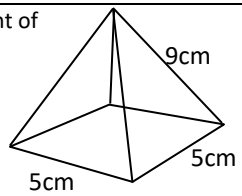
$$\frac{\square \pm \sqrt{\square}}{\square}$$

19. O is the centre. Find the size of angle 'x' — *11:23*



10. Write down the solution set for: $(x+4)(x-1) < 0$ — *11:11*

20. Work out the perpendicular height of the square based pyramid.(1dp) — *11:24*



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