Maths Key Skills **Stage 11: Skill Check 4**

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

A: Number & Algebra

1. Simplify: $\sqrt{18} - \sqrt{8}$ *11:1*

2. Expand & simplify: *11:2*

$$(3+\sqrt{2})(4+\sqrt{2})$$

3. If x=3.8(1dp) and y=4.60(2dp) *11:3*
Work out minimum value of **y – x.**

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

$$\frac{5x}{x-3} - \frac{2x}{x+4}$$

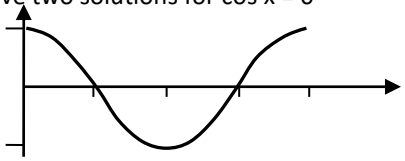
5. Solve: $\frac{x+5}{x-3} = x$ *11:5*

B: Algebra, Proportion, Geometry & Measure

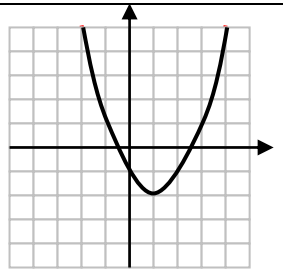
11. Make (g) the new subject of : *11:12*

$$f = 3g - 4 + gh$$

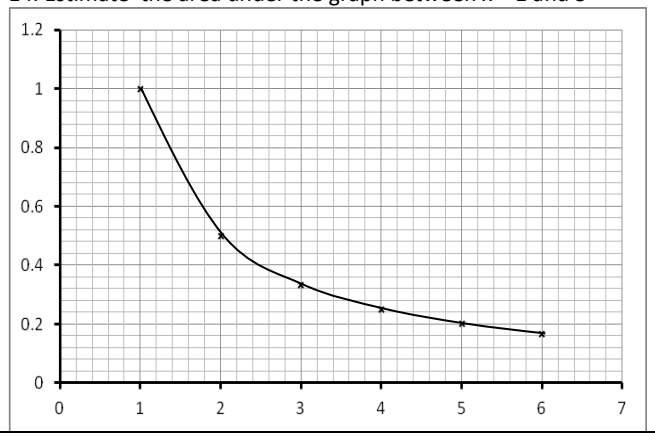
12. This the graph of y = cosx *11:14*
Give two solutions for cos x = 0



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



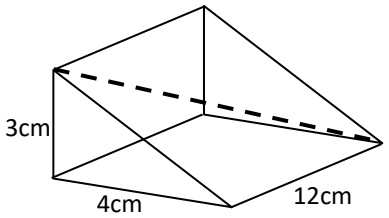
14. Estimate the area under the graph between x = 1 and 3 *11:16*



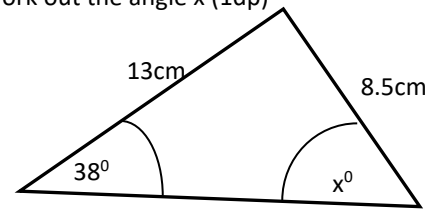
15. Write down the equation of the tangent at (2,1) on the circle $x^2+y^2 = 5$ *11:18*

C: Geometry & Measure & Statistics

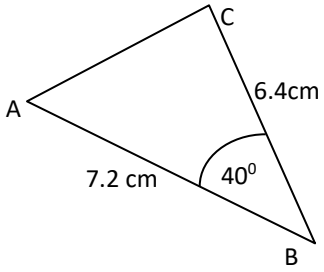
21. Work out the angle that base makes with the broken line. (correct to 3sf) *11:26*



22. Work out the angle x (1dp) *11:27*



23. Work out the side AC (3sf) *11:28*



6. If $f(x) = x^2 - 4x$, solve $f(x) = 0$ *11:7*

7. Find the turning point of: *11:8*

$y = x^2 - 6x - 3$

8. Solve by completing the square: *11:9*

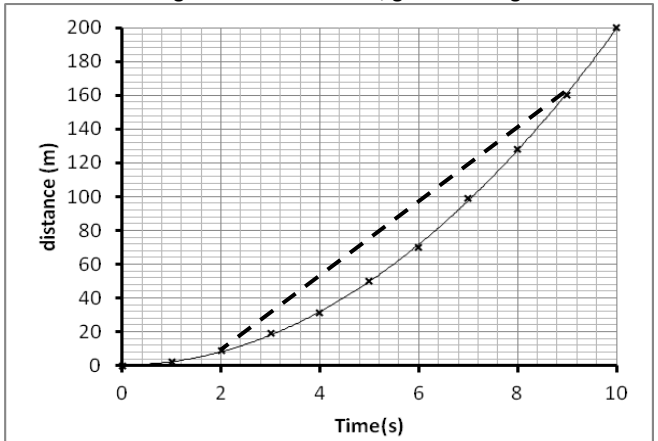
$x^2 + 5x + 2 = 0$

(Write down the EXACT values)

9. To solve: $2x^2 + x - 3 = 0$ by formula. *11:10*

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

16. Estimate the gradient of the chord, give meaning & units *11:20*



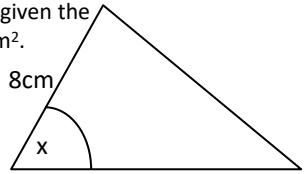
17. $2x^2 - 3x - 1 = 0$ can be solved using the iteration formula: *11:21*

$$x_{n+1} = \sqrt{\frac{3x_n + 1}{2}}$$

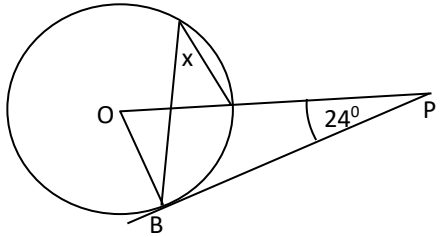
(to 1dp)

Start with $\mathbf{x_1 = 2}$ and work out an approximation for x by finding $\mathbf{x_3}$

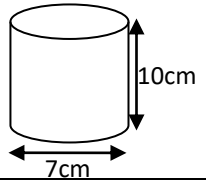
18. Work out the angle 'x' given the area of this triangle is $54cm^2$. (Correct to nearest whole degree) *11:22*



19. O is the centre. Work out angle x. *11:23*



20. Work out the maximum length pencil that will fit inside this cylindrical tin. (correct to 1dp) *11:24*

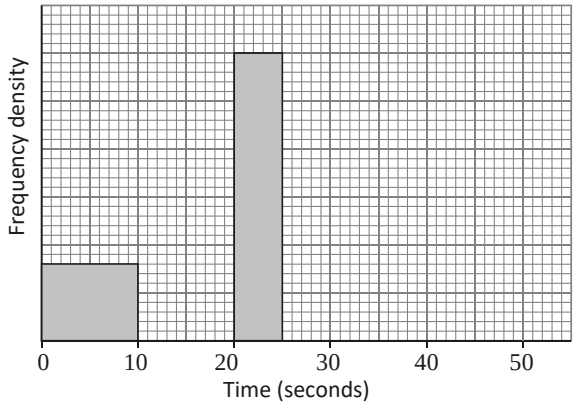


24. If $\overrightarrow{AB} = 2\underline{\mathbf{b}} - 2\underline{\mathbf{a}}$ and $\overrightarrow{CD} = \frac{1}{2}(-\underline{\mathbf{a}} + \underline{\mathbf{b}})$ *11:29*

Prove that AB is parallel to CD

25. Use the table to complete the histogram: *11:30*

Time (t seconds)	Frequency
$0 < t \leq 10$	8
$10 < t \leq 20$	16
$20 < t \leq 25$	15
$25 < t \leq 30$	12
$30 < t \leq 50$	6



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