Maths Key Skills **Stage 11: Skill Check 9**

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

A: Number & Algebra

1. Write √200 in the form a√b *11:1*

2. Rationalise & simplify: *11:2*

$$\frac{2}{4+\sqrt{2}}$$

3. If x=18 & y=12(both to nearest integer) *11:3*
Work out maximum value of **x ÷ y**

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

$$\frac{2x}{x-1} - \frac{2}{x+1}$$

5. Solve: *11:5*

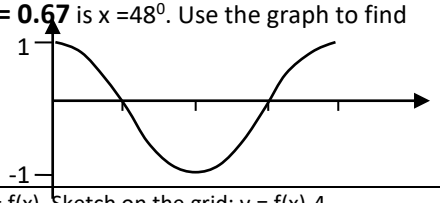
$$\frac{5}{x+1} + \frac{2}{x-1} = \frac{4x}{x^2-1}$$

B: Algebra, Proportion, Geometry & Measure

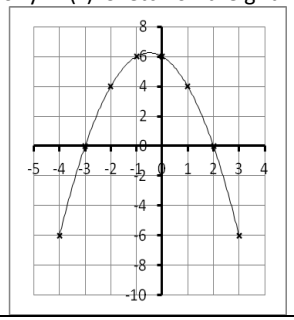
11. Make (**x**) the new subject of : *11:12*

ax + y = cx + w

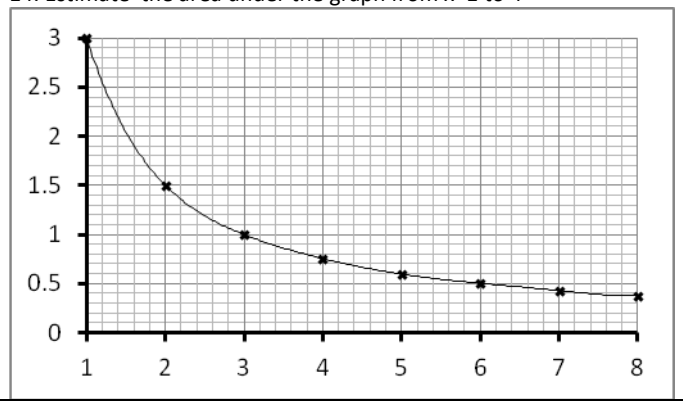
12. This is the graph of y = cosx *11:14*
One solution for **cosx = 0.67** is x =48^0. Use the graph to find another solution.



13. This is the graph of y = f(x). Sketch on the grid: y = f(x)-4 *11:15*



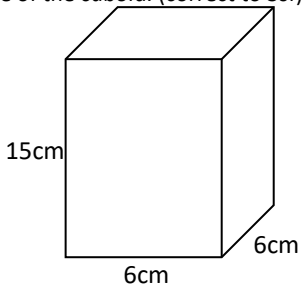
14. Estimate the area under the graph from x=1 to 4 *11:16*



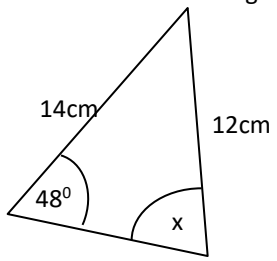
15. Find equation of tangent at the point P(1,-4) on a circle with centre (-1,-2) *11:18*

C: Geometry & Measure & Statistics

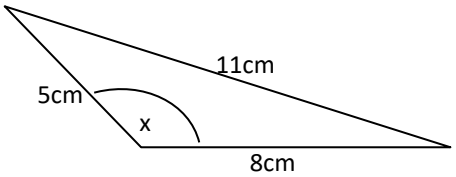
21. Work out the angle that the diagonal makes with the base of the cuboid. (correct to 3sf) *11:26*



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



23. Find the size of the <u>obtuse</u> angle 'x'? (3sf) *11:28*



6. If $h(x) = 5\sqrt{x} - 9$, solve: $h(x) = 1$.

11:7

7. Find the turning point of:
$y = x^2 + 4x - 5$

11:8

8. Solve by completing the square:
$5x^2 + 20x - 45 = 0$
(Write down the EXACT values)

11:9

9. To solve: **$5x^2 + 6x - 3 = 0$** by formula. Give answers in surd form.

11:10

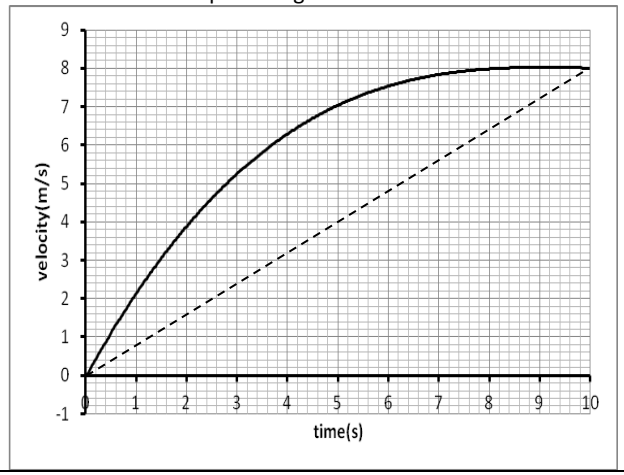
$\frac{\square \pm \sqrt{\square}}{\square}$

10. Write down the solution set for: $(x-9)(x+6) < 0$

11:11

16. Estimate & interpret the gradient of the chord.

11:20



17. $x^4 - 3x + 1 = 0$ can be solved using the iteration formula:

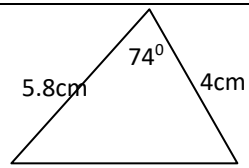
$x_{n+1} = \frac{x_n^4 + 1}{3}$

Correct to 2dp

Start with $\mathbf{x_1 = 1}$ & work out an approximation for x by finding $\mathbf{x_4}$

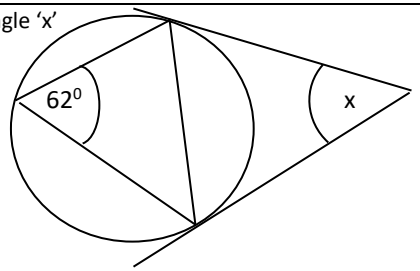
11:21

18. Work out the area of this triangle (Correct to 3sf)



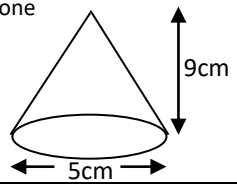
11:22

19. Find the size of angle 'x'



11:23

20. Work out the slant height of this cone (1dp)



11:24

24. $\overrightarrow{OP} = 2\underline{\mathbf{p}} + 3\underline{\mathbf{q}}$

$\overrightarrow{OQ} = 4\mathbf{p} - \mathbf{q}$

Express $\overrightarrow{PQ}$ in terms of **p** and **q**

11:29

25. Complete the table :

Time(min)	Frequency	fd
$0 < t \leq 10$	65	
$10 < t \leq 15$	40	
$15 < t \leq 45$	126	
$45 < t \leq 60$	51	

11:30

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