

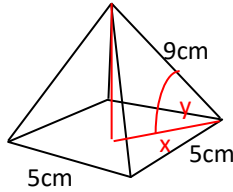
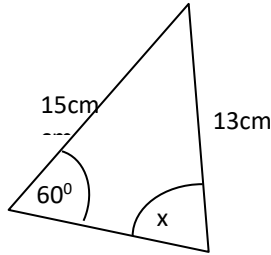
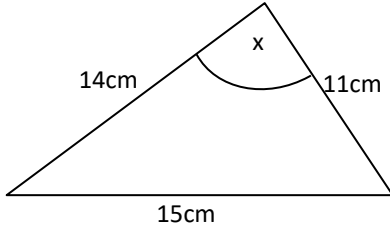
Maths Key Skills

Name:

Date:

Stage 11: Skill Check 11 Answers

Class/Group:

A: Number & Algebra		B: Algebra, Proportion, Geometry & Measure		C: Geometry & Measure & Statistics	
1. Write $4\sqrt{27}$ in the form $k\sqrt{3}$	11:1 12√3	11. Make (y) the new subject of : $y - 5 = \frac{3y-4}{w}$	11:12 $y = \frac{5w-4}{w-3}$	21. Work out the angle between the slant edge & the square base. (correct to 3sf)	11:26 66.9°
2. Expand & simplify: $(1 - \sqrt{7})^2$	11:2 8-2√7	12. One solution for $\sin x = 0.8$ (1dp) is $x = 54^\circ$. Use the graph to find another solution.	11:14 180-54 =126°		$x = \sqrt{12.5}$ $\cos y = \frac{\sqrt{12.5}}{9} = 0.392\dots$ $y = 66.9^\circ$
3. If $x=5.82$ (2dp) & $y=1.4$ (1dp) Work out maximum value of $x - y$	11:3 5.825-1.35 =4.475	13. This is the graph of $y = f(x)$. Sketch on the grid: $y = f(-x)$	11:15	22. Find the angle 'x' (1dp)	11:27 87.8°
4. Simplify the following fraction: $\frac{x^2+4x-5}{2x} \times \frac{6x^2}{x^2-1}$	11:4 $\frac{3x(x+5)}{(x+1)}$	14. Estimate & interpret the area under the graph over the first 3s	11:16 Distance travelled (displacement) = 9.5m		$\frac{\sin x}{15} = \frac{\sin 60}{13}$ $\sin x = \frac{15 \sin 60}{13}$ $\sin x = 0.999\dots$
5. Solve: $\frac{5}{x} + \frac{3}{x+1} = \frac{3}{2}$	11:5 $x = -2/3$ or 5	15. Write down the equation of the tangent at (5,-2) on the circle with centre (1,1)	11:18 $m_{\text{radius}} = (-2-1)/(5-1) = -3/4$ $m_{\text{tangent}} = 4/3$ Equation of tangent: $y = 4/3x + c$ (5,-2): $-2 = 4/3(5) + c$; $c = -26/3$ Equation of tangent: $y = 4x/3 - 26/3$ or $3y = 4x - 26$	23. Find the angle 'x' (2sf)	11:28 73°
	$2(5x+5+3x) = 3x(x+1)$ $10x+10+6x = 3x^2+3x$ $3x^2-13x-10=0$ $(3x+2)(x-5)=0$ $x = -2/3$ or 5				$\cos x = \frac{14^2+11^2-15^2}{2(14)(11)}$ $\cos x = 0.2987\dots$ $x = 73^\circ$

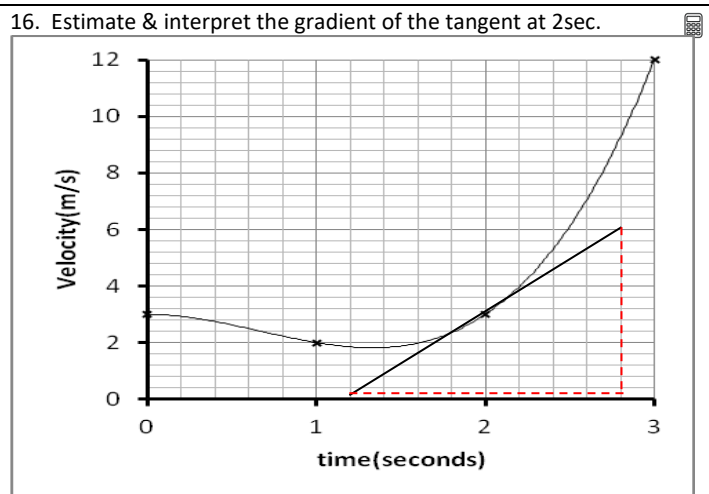
6. If $f(x) = 2x^2 - 3$, work out: $f^{-1}(x)$

11:7
 $\sqrt{\frac{x+3}{2}}$

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

11:8
(3, -18)

$(x-3)^2 - 9 - 9$
 $(x-3)^2 - 18$
(3, -18)



11:20
 Average acceleration of 3.75m/s^2 at 2 sec

24.
 $\vec{OA} = 2a + b$
 $\vec{OB} = 3a + 2b$
 Express & simplify \vec{AB} in terms of a and b

11:29
 $a+b$

$-2a - b + 3a + 2b$
 $= a + b$

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

11:9
 $x = 1 + \sqrt{10}$ or $1 - \sqrt{10}$

$(x-1)^2 - 1 - 9 = 0$
 $(x-1)^2 - 10 = 0$
 $x-1 = \pm\sqrt{10}$
 $x = 1 + \sqrt{10}$ or $1 - \sqrt{10}$

17. $x^2 - 5x - 8 = 0$ can be solved using the iteration formula:
 $x_{n+1} = \sqrt{5x_n + 8}$
 Start with $x_1 = 6$ & work out an approximation for x by finding x_5

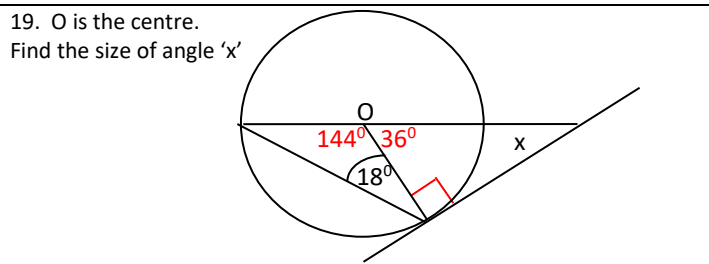
11:21
6.27

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

11:22
 19m^2

9. To solve: $3x = 2x^2 - 4$ by formula. Give answers in surd form.

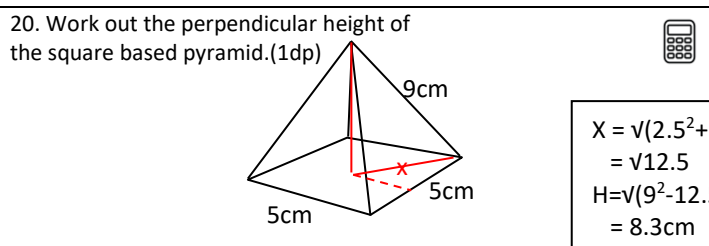
11:10
 $3 \pm \sqrt{41}$
4



11:23
 $90 - 36 = 54^\circ$

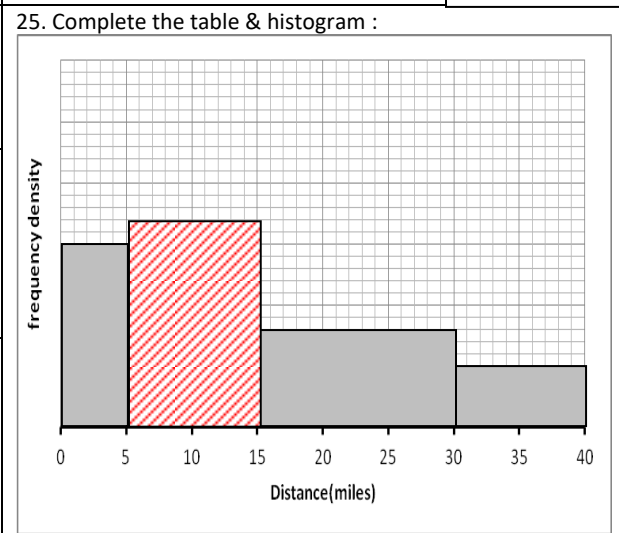
10. Write down the solution set for: $(x+4)(x-1) < 0$

11:11
 $\{x: -4 < x < 1\}$



11:24
8.3cm

$x = \sqrt{(2.5^2 + 2.5^2)}$
 $= \sqrt{12.5}$
 $H = \sqrt{(9^2 - 12.5)}$
 $= 8.3\text{cm}$



11:30

Distance	Frequency
$0 < d \leq 5$	15
$5 < d \leq 15$	34
$15 < d \leq 30$	24
$30 < d \leq 40$	10

Total (A)

Total (B)

Total (C)

Test Total (A+B+C)

R (0-9)

Y (10-19)

G (20-25)