

Set 10 non calc-credit

Q1-Q5 dc

Q6 $1.05 \div 300$
 $1.05 \div 3 \div 100$
 $0.35 \div 100$
 $= 0.0035$

$$\begin{array}{r} 0.35 \\ 3 \overline{) 1.05} \\ \underline{3} \\ 70 \\ \underline{60} \\ 100 \\ \underline{90} \\ 100 \\ \underline{90} \\ 10 \end{array}$$

Q12. $3\frac{1}{4} \times 1\frac{1}{3}$

Q7. $65 \times (-5)$
 $= -325$

$$\begin{array}{r} 65 \\ \times 5 \\ \hline 325 \end{array}$$

Q8. $(-7) \times 27$
 $= -189$

$$\begin{array}{r} 27 \\ \times 7 \\ \hline 189 \end{array}$$

Q9. 40% of £2.60
 $10\% = 2.60 \div 10$
 $= 0.26$

$40\% = 0.26 \times 4 \Rightarrow \underline{\underline{£1.04}}$

$$\begin{array}{r} 0.26 \\ \times 4 \\ \hline 1.04 \end{array}$$

Q10 $74 - (-19)$
 $74 + 19$
 $= 93$

$$\begin{array}{r} 74 \\ + 19 \\ \hline 93 \end{array}$$

Q11 $8\frac{2}{3} + 4\frac{1}{2}$

always convert to top heavy

$$\frac{8 \times 3 + 2}{3} + \frac{4 \times 2 + 1}{2}$$

$$= \frac{26 \times 2}{3 \times 2} + \frac{9 \times 3}{2 \times 3}$$

$$= \frac{52}{6} + \frac{27}{2}$$

$$= \frac{79}{6}$$

$$\begin{array}{r} 13 \text{ r } 1 \\ 6 \overline{) 79} \\ \underline{60} \\ 19 \\ \underline{18} \\ 1 \end{array} \Rightarrow \underline{\underline{13\frac{1}{6}}}$$

$$\text{Q12. } 3\frac{1}{4} \times 1\frac{1}{3}$$

$$\Rightarrow \frac{3 \times 4 + 1}{4} \times \frac{1 \times 3 + 1}{3}$$

$$= \frac{13}{4} \times \frac{4}{3}$$

$$= \frac{52}{12}$$

$$\frac{13}{\times 4}$$

$$\frac{52}{1}$$

$$= 4\frac{4}{12} \text{ (Simplify)}$$

$$= \underline{\underline{4\frac{1}{3}}}$$

$$\text{Q13. } \left(3\frac{1}{2} \div \frac{3}{4}\right) \times \frac{1}{3}$$

$$\left(\frac{3 \times 2 + 1}{2} \div \frac{3}{4}\right) \times \frac{1}{3}$$

$$= \left(\frac{7}{2} \times \frac{4}{3}\right) \times \frac{1}{3}$$

$$= \frac{28}{6} \times \frac{1}{3}$$

$$\frac{28}{18}$$

$$= \left|\frac{10}{18}\right\} \text{ (Simplify)}$$

$$= \underline{\underline{\frac{5}{9}}}$$

$$\text{Q14. } \left(\left(1\frac{3}{4} \div 2\frac{1}{3}\right) - \frac{1}{2}\right) \times 2$$

$$\left(\left(\frac{1 \times 4 + 3}{4} \div \frac{2 \times 3 + 1}{3}\right) - \frac{1}{2}\right) \times 2$$

$$\left(\left(\frac{7}{4} \div \frac{7}{3}\right) - \frac{1}{2}\right) \times 2$$

$$\left(\left(\frac{4}{4} \times \frac{3}{7} \right) - \frac{1}{2} \right) \times 2.$$

$$= \left(\frac{21}{28} - \frac{14}{28} \right) \times 2$$

$$= \frac{4}{28} \times 2$$

$$= \frac{14}{28}$$

$$= \underline{\underline{\frac{1}{2}}}$$

$$\text{Q15. } (4.4 \times 20) \div \left(1 \div \frac{1}{11} \right)$$

$$(4.4 \times 2 \times 10) \div \left(1 \times \frac{11}{1} \right)$$

$$= (8.8 \times 10) \div \left(\frac{1}{1} \times \frac{11}{1} \right)$$

$$= 88 \div 11$$

$$= \underline{\underline{8}}$$

$$\text{Q16. } 150 \text{ l/m.}$$

$$\frac{480}{150} = \frac{48}{15} = \frac{16}{5} =$$

$$5 \overline{) 16.00} \quad \begin{array}{r} 3.2 \\ \underline{15} \\ 10 \\ \underline{9} \\ 100 \\ \underline{90} \\ 100 \\ \underline{90} \\ 100 \\ \underline{90} \\ 100 \end{array}$$

$$= 3.2 \text{ mins}$$

$$= 3 \text{ mins} +$$

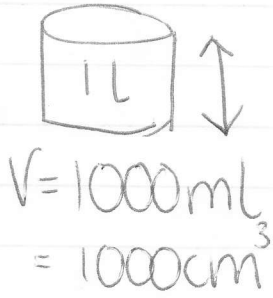
$$12 \text{ secs.}$$

$$0.2 \text{ mins}$$

$$= 0.2 \times 60$$

$$= 12 \text{ secs.}$$

Q17.



$V = 1000 \text{ ml}$
 $= 1000 \text{ cm}^3$

$h = 2r$

$V = \pi r^2 \times h$ Sub in

$\pi r^2 \times 2r = 1000$

$2\pi r^3 = 1000$

$\pi r^3 = \frac{1000}{2}$

$\pi r^3 = 500$

$r^3 = \frac{500}{\pi}$

$r = \sqrt[3]{\frac{500}{\pi}}$

Q18

$x + 1 = \frac{6}{x} \times x$

$x(x + 1) = 6$

$x^2 + x = 6$

$x^2 + x - 6 = 0$

$(x + 3)(x - 2) = 0$

$x = -3, 2$

Q19

$\frac{5x^2 - 20}{x^2 + 2x}$ } factorise and remove CF

$= \frac{5(x^2 - 4)}{x(x + 2)}$ - diff of squares

$= \frac{5(x - 2)(x + 2)}{x(x + 2)}$

$= \frac{5(x - 2)}{x}$

$$20. \sqrt{20} - \sqrt{45} + \sqrt{80}$$

$$= \sqrt{4 \times 5} - \sqrt{9 \times 5} + \sqrt{16 \times 5}$$

$$= (\sqrt{5 \times 5} - \sqrt{9 \times 5} + \sqrt{16 \times 5})$$

$$= 2\sqrt{5} - 3\sqrt{5} + 4\sqrt{5}$$

$$= \underline{\underline{3\sqrt{5}}}$$

$$21. \frac{5 \cdot (x-2)}{x(x-2)} - \frac{3 \cdot x(x-2)}{x(x-2)}$$

$$= \frac{5(x-2)}{x(x-2)} - \frac{3x}{x(x-2)}$$

$$= \frac{5(\overbrace{x-2}^{\text{cancel}}) - 3x}{x(x-2)}$$

$$= \frac{5x - 10 - 3x}{x(x-2)}$$

$$= \frac{2x - 10}{x(x-2)}$$

$$22. 8x^2 - 6x - 5$$

$$= \underline{\underline{(2x+1)(4x-5)}}$$

<u>t + e:</u>	←	<u>8.</u>		<u>5</u>
(2x + 1) + 4x		1 × 8		1 × 5
(4x - 5) - 10x		2 × 4		
		-6x		

$$\begin{aligned}
 23. \quad & \frac{1}{\sqrt{5}-\sqrt{2}} \times \frac{(\sqrt{5}+\sqrt{2})}{(\sqrt{5}+\sqrt{2})} \\
 & = \frac{(\sqrt{5}+\sqrt{2})}{(\sqrt{5}-\sqrt{2})(\sqrt{5}+\sqrt{2})} \quad (\text{foul}) \\
 & = \frac{(\sqrt{5}+\sqrt{2})}{\sqrt{25+\sqrt{10}-\sqrt{10}-\sqrt{4}}} \\
 & = \frac{(\sqrt{5}+\sqrt{2})}{5-2} \\
 & = \frac{(\sqrt{5}+\sqrt{2})}{\underline{\underline{3}}}
 \end{aligned}$$

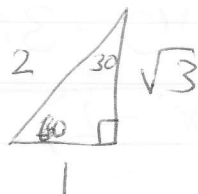
$$24. f(x) = \tan x$$

$$f(30) = \tan 30$$

$$= \frac{1}{\sqrt{3}}$$

Rational demon

$$\Rightarrow \frac{\sqrt{3}}{\underline{\underline{3}}} \quad \left(\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \right)$$



$$25 \quad x - 3y = -11 \quad (1)$$

$$2y - 3x = 12 \quad (2)$$

$$-3y + x = -11 \quad (1) \text{ (rearranged)} \times 3$$

$$2y - 3x = 12 \quad (2)$$

$$-9y + 3x = -33 \quad (3)$$

$$(3) + (2)$$

$$2y - 3x = 12 \quad (2)$$

$$3x + (-3x) = 0 \quad \checkmark$$

$$3x - (-3x) \quad 6x$$

$$-7y = -21$$

* Δ

$$* -9y + 2y = -7y$$

$$\underline{y = 3}$$

$$\Delta -33 + 12 = -21$$

Sub $y = 3$ into (1)

$$x - 3 \times (3) = -11$$

$$x - 9 = -11$$

$$\underline{x = -2}$$

$$\underline{x = -2}, \underline{y = 3}$$

$$26 \quad v^2 = u^2 + 2as$$

$$u^2 + 2as = v^2$$

$$u^2 = v^2 - 2as$$

$$\underline{u = \sqrt{v^2 - 2as}}$$

$$27. \frac{3u^{-4} \times 5u^3}{u^{-2}}$$

$$= \frac{15u^{-1}}{u^{-2}}$$

$$= 15u^{-1} \div u^{-2}$$

$$= 15u^{-1-(-2)}$$

$$= \underline{\underline{15u^1}} \quad (15u)$$

$$28. \frac{(4x+3) \times 3}{5 \times 3} + \frac{(2x+3) \times 5}{3 \times 5} = 6$$

$$\frac{3(4x+3)}{15} + \frac{5(2x+3)}{15} = 6$$

$$\frac{12x+9}{15} + \frac{10x+15}{15} = 6$$

$$\Rightarrow \frac{12x+9+10x+15}{15} = 6$$

$$\frac{22x+24}{15} = 6 \times 15$$

$$22x+24 = 90$$

$$22x = 66$$

$$\underline{\underline{x = 3}}$$

$$29. (2x-3)(x+2)(x-1)$$

foil

$$(2x^2 + 4x - 3x - 6)(x-1)$$

$$(2x^2 + x - 6)(x-1)$$

$$2x^3 + x^2 - 6x - 2x^2 - x + 6$$

$$= 2x^3 - x^2 - 7x + 6$$

multiply everything
in first bracket
by x , multiply
everything
in first by -1

$$30. 15 - (3 - 6x) = 9x + 10$$

$$15 - (3 - 6x) = 9x + 10$$

$$15 - 3 + 6x = 9x + 10$$

$$12 + 6x = 9x + 10$$

$$2 + 6x = 9x$$

$$2 = 3x$$

$$x = \frac{2}{3}$$