

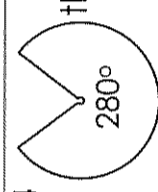
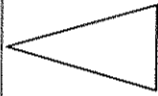
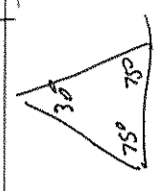


Homework Sheet 1

Mark:

1	Evaluate $3\frac{1}{3} - 2\frac{4}{5}$	$8 \mid \frac{1}{3} - \frac{4}{5} = \frac{5-12}{15} = 1 - \frac{7}{15} = \frac{8}{15}$
2	Find the equation of the straight line passing through these points: (2,-3) and (3,9).	$m = \frac{9+3}{3-2} = 12$ $y+3 = 12(x-2)$ $y = 12x - 27$
3	Simplify $m^5 \times m^9$	$m^{14} = \frac{1}{m^4}$
4	Change the subject of the formula to n: $k = \frac{mn^2}{p}$	$mn^2 = kp$ $n^2 = \frac{kp}{m}$ $n = \sqrt{\frac{kp}{m}}$
5	Solve $4\sin x = 2$ (for $0 < x < 360$)	$\sin x = \frac{2}{4} = \frac{1}{2}$ $x = 30^\circ, 150^\circ$ $\checkmark \frac{1}{2} = \frac{1}{2}$ $\theta = \sin^{-1} \frac{1}{2} = 30^\circ$
6	This formula estimates your skin's surface area in m^2 (h=height (cm) and w=weight (kg)). Work out A for a man 1.6metres tall, weighing 70kg.	$A = \sqrt{\frac{hw}{3600}} = \sqrt{\frac{160 \times 70}{3600}} = 1.76 m^2$
7	Factorise fully: $2t^2 - 18$	$2t^2 - 18 = 2(t^2 - 9) = 2(t-3)(t+3)$
8	A classic car bought for £74,000 increases in value by 6.5% every year for 3 years. Its new value?	$DM = 600 + 6.5 = 106.5\% = 1.065$ Akw 3 years = $(1.065)^3 \times 74,000 = 89,388.272 = \pounds 89,388.27$
9	In triangle ABC: AB=12cm, BC=15cm and the angle ABC=40°. Find the area of this triangle to 3s.f.	$\text{Area} = \frac{1}{2} ac \sin B = \frac{1}{2} \times 15 \times 12 \times \sin 40^\circ = 57.9 cm^2$
10	Find the roots of the equation $x^2 - 2x - 15 = 0$	$(x-5)(x+3) = 0$ Either $x=5$ or $x=-3$

11	 <p>Find the cost of a Mars bar. £12.22</p>	$7t + 2m = 13.26$ ① $3t + 5m = 12.22$ ② 10×3 $12t + 6m = 39.78$ ③ 10×4 $12t + 20m = 48.88$ ④ 10×5 $14m = 9.10$ $m = 0.65$ Mars bar is 65p.
12	$u = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$ and $v = \begin{pmatrix} 4 \\ -5 \end{pmatrix}$ Find $3u - 2v$	$3 \begin{pmatrix} 2 \\ -3 \end{pmatrix} - 2 \begin{pmatrix} 4 \\ -5 \end{pmatrix} = \begin{pmatrix} 6 \\ -9 \end{pmatrix} - \begin{pmatrix} 8 \\ -10 \end{pmatrix} = \begin{pmatrix} -2 \\ 1 \end{pmatrix}$
13	Similar pumpkins - find width of large one! 	$LSF = \frac{9}{6} = \frac{3}{2}$ new width = $\frac{3}{2} \times 5 = \frac{15}{2} = 7.5cm$.
14	Calculate the arclength of this sector of a circle (whose diameter is 12cm) to 3s.f. 	$arc\ length = \frac{280}{360} \times \pi \times 12 = 29.321...$ $= 29.3 cm$
15	Complete the square: $x^2 + 8x - 7$	$(x+4)^2 - 16 - 7$ $(x+4)^2 - 23$.
16	Is a triangle with sides 82cm, 80cm and 18cm right-angled?	$82^2 = 6724$ $80^2 + 18^2 = 6724$ \therefore it is a RAT as $c^2 = a^2 + b^2$
17	Express in simplified form: $\sqrt{6 \times \sqrt{8}}$	$\sqrt{48} = \sqrt{16 \times 3} = 4\sqrt{3}$
18	Find the mean and standard deviation for this data: 3, 4, 6, 8, 8	$\bar{x} = 5.8$ $\begin{matrix} 3 & -2.8 & 7.84 \\ 4 & -1.8 & 3.24 \\ 6 & 0.2 & 0.04 \\ 8 & 2.2 & 4.84 \\ 8 & 2.2 & 4.84 \end{matrix}$ $SD = \sqrt{\frac{20.8}{4}} = 2.280... = 2.3$
19	One of the angles in an isosceles triangle is 30°. What are the two possible sizes of the other angles? 	
20	Copy and complete these trig identities (must be memorised!) $\frac{\sin x}{\cos x} = ?$	$\frac{\sin^2 x + \cos^2 x}{\cos x} = ?$ $\frac{\sin x}{\cos x} = \tan x$