

How to pass
N5 Maths.

Questions +
Solutions

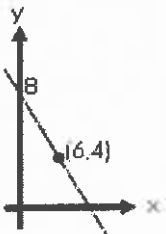
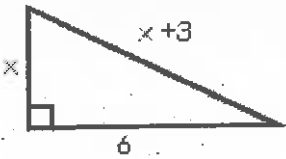
Homework Sheet 1

Mark:

1	Evaluate $3\frac{1}{3} - 2\frac{4}{5}$	
2	Find the equation of the straight line passing through these points: (2,-3) and (3,9).	
3	Simplify $m^5 \times m^{-9}$	
4	Change the subject of the formula to m : $k = \frac{mn^2}{p}$	
5	Solve $4\sin x^\circ = 2$ (for $0 < x < 360$)	
6	Find the mean and standard deviation for this data: 3, 4, 6, 8, 9	
7	Factorise fully: $2t^2 - 18$	
8	A classic car bought for £74,000 increases in value by 6.5% every year for 3 years. Its new value?	
9	Is a triangle with sides 82cm, 80cm and 18cm right-angled?	
10	Find the roots of the equation $y = x^2 - 2x - 15$	

Homework Sheet 2

Mark:

<p>1</p> <p>Evaluate $14.3 + 8.2 \times 30$</p>	
<p>2</p> <p>Find the equation of the given straight line.</p> 	
<p>3</p> <p>Simplify $\frac{\sqrt{12}}{\sqrt{60}}$</p>	
<p>4</p> <p>Change the subject of the formula to r: $p = \frac{3r^2}{y}$</p>	
<p>5</p> <p>Solve $5 \tan x^\circ + 3 = 4$ (for $0 < x < 360$)</p>	
<p>6</p> <p>Solve this equation to 2d.p. $3x^2 + 7x - 4 = 0$</p>	
<p>7</p> <p>Factorise fully: $3x^2 + 9x - 30$</p>	
<p>8</p> <p>A bottle contains 336ml which is 30% less than it used to. What was the original volume?</p>	
<p>9</p>  <p>Find the value of x:</p>	
<p>10</p> <p>Find the roots of the equation $y = 2x^2 - 9x - 5$</p>	

Homework Sheet 3

Mark:

1	Find $4\frac{2}{5} \div \frac{1}{4}$	
2	Find the equation of a straight line through (3,-5) parallel to $y=4x+2$.	
3	Remove brackets and simplify $a^2\left(a^{\frac{1}{2}}-2\right)$	
4	Solve $x-2(x+1) = 8$	
5	Sketch the graph of $y=4\cos 2x^\circ$ for $0 \leq x \leq 360$	
6	Find the volume of a sphere with radius 5cm, giving your answer to two significant figures.	
7	Remove brackets and simplify $(2x+3)^2 - 3(x^2-6)$	
8	Dave's car was bought for £16,000 but is losing 7.5% each year. What will it be worth in 4 years?	
9	Triangle ABC has $AC=5.6\text{m}$, angle $ABC=83^\circ$ and angle $ACB=40^\circ$. Find the length of AB.	
10	Describe the nature of the roots of $y = 5x^2 - 7x - 2$	

Homework Sheet 4

Mark:

1	Without a calculator: $\frac{2.3 + 2.1 \times 5}{2^3}$	
2	Does the point (-2,5) lie on the line $y = 3x + 10$? Explain your answer.	
3	Simplify, leaving your answer as a surd: $2\sqrt{20} - 3\sqrt{5}$	
4	Simplify $(x + 4)(3x - 1)$	
5	Sketch the graph of $y = 3\sin(0.5x^\circ)$ for $0 \leq x \leq 360$	
6	Solve $3x^2 - 11x + 1 = 0$, giving your answers to two decimal places.	
7	Factorise $3x^2 - 14x + 15$	
8	In a Spring Sale, a bag of springs now costs £3.60. What was it worth before the 20% sale?	
9	What is the area of an equilateral triangle of side 40cm?	
10	Sketch $y = (x - 3)(x + 2)$. Label the intercepts and turning point.	

Homework Sheet 5

Mark:

1

If $f(x) = x^2 + 3x$, find $f(-2)$

2



Which of these could this line represent?

A: $y = 3x + 2$ B: $y = -3x + 2$ C: $y = 3x - 2$

D: $y = 3x^2 - 2$ E: $y = -3x - 2$

3

Find the length of the longest side on a right angled triangle with smaller sides 1 cm and 7 cm (leave your answer as a simplified surd).

4

Solve $2x + 15 \leq 3(x - 1)$

5

Solve $4 \tan x^\circ = 2$
(for $0 < x < 180$)

6

Calculate the standard deviation for this:

~~2, 3~~ 8, 14, 20

7

Expand and simplify
 $(3x+1)(x^2-5x+4)$

8

China's population is 1.34×10^9 .
If this increases by 5% for the next 6 years, what will it be?

9

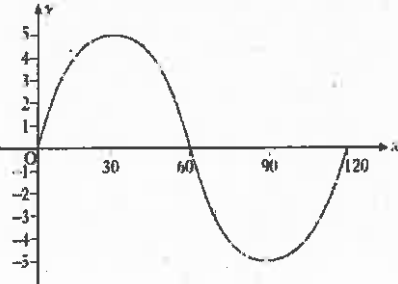
A square has side x .
It has a diagonal of 6 cm.
Calculate the exact length of x .

10

How many real solutions are there to the equation $2x^2 - 2x + 3 = 0$?

Homework Sheet 6

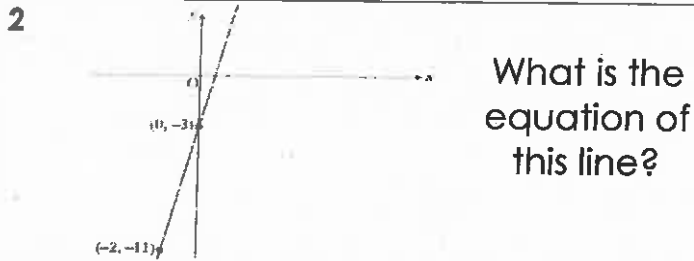
Mark:

1	Find $\frac{1}{2}\left(1\frac{2}{7}-\frac{5}{9}\right)$
2	A straight line with gradient 5 passes through (4,8) and (2,a). Find the value of a.
3	Expand $k^2\left(3k+2k^{-4}-k^{\frac{1}{2}}\right)$
4	Change the subject of the formula to W: $5W - J^2 = \frac{4}{L}$
5	 <p>This is the graph $y = a \sin(bx^\circ)$</p> <p>Find the value of a and b.</p>
6	Can a cylinder with height 10cm and diameter 8cm hold 500ml of water? Explain your answer.
7	Factorise fully: $10x^2 - 50x + 240$
8	My total bill for fixing my car included 8% tax. If the bill was £324, what was the bill before tax?
9	A triangle has sides 12cm, 14cm and 21cm. Find the sizes of its biggest angle.
10	Sketch $y = (2x - 5)(x + 1.5)$ Label the intercepts and turning point.

Homework Sheet 7

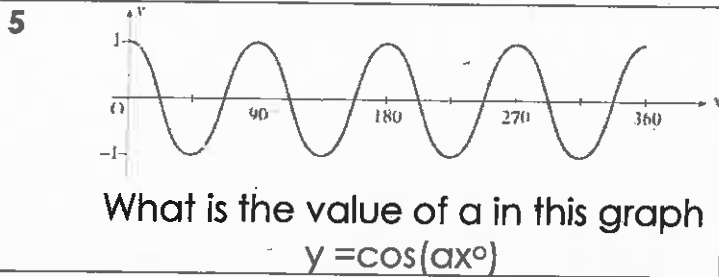
Mark:

1 Without a calculator find $\frac{4}{7}$ to three decimal places.



3 Find $27^{\frac{2}{3}}$

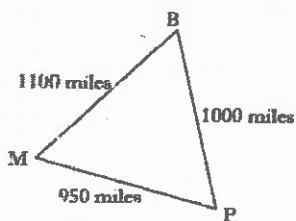
4 Solve $3x+1 = \frac{x-5}{2}$



6 Show that the standard deviation of 1,1,1,2,5 is $\sqrt{3}$ and **write down** the s.d. of 101,101,101,102,105.

7 Multiply out and simplify:
 $3(x^2 - 5x + 1) - 2x(x - 4)$

8 If these shapes have the same height which has greater volume:
a cone with radius 3cm or a cylinder with radius 2cm?

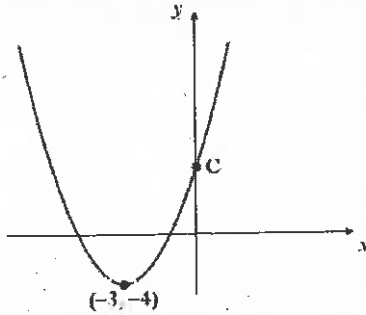


Here's the Bermuda Triangle (Bermuda-Miami-Puerto Rico). Find angle BMP

10 Write down the axis of symmetry and the coordinates of the turning point of $y = (x-6)^2 + 2$

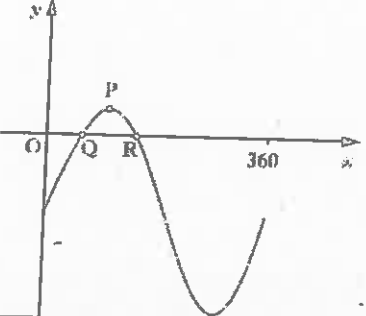
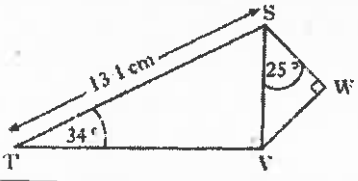
Homework Sheet 8

Mark:

1	Without a calculator find 35% of £84.50	
2	A straight line is given by $y=mx+c$. Sketch this to illustrate a possible graph when $m > 0$ and $c < 0$.	
3	Simplify $\frac{ab^6}{a^2b^3}$	
4	Write $\frac{3}{a} + \frac{5}{a-1}$ as a single fraction	
5	Solve $4\sin x^\circ = 2\sin x^\circ + 1$ for $0 \leq x \leq 360$	
6	Solve $3x^2 + 2x = 10$, giving your answer to two decimal places.	
7	Factorise $10.2^2 - 9.8^2$. Can you use your answer to see what the value of this expression is?	
8	The big jar of marmalade (450g) has 12.5% more than the standard one. What's in the standard one?	
9	Plot the point A (-5,2) on a coordinate diagram. How far is it from A to the origin?	
10	 <p>Here is the graph of $y=(x-a)^2+b$ Find a, b and use your equation to find c.</p>	


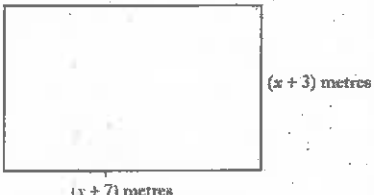
Homework Sheet 9

Mark:

1	Find the mean of $\frac{3}{5}, \frac{5}{8}, \frac{3}{4}, \frac{1}{2}$.
2	Find the gradient and y-intercept for this straight line: $6x + 2y = 5$
3	Express $\frac{12}{\sqrt{2}}$ with a rational denominator in its simplest form.
4	Change the subject of the formula to h: $A = \frac{1}{2}h(a + b)$
5	 <p>The graph shown is $y = 5\sin x^\circ - 4$. Find the coordinates of Q and P.</p>
6	<p>4M1 Test Scores: Mean=75%, s.d.=10%</p> <p>4M2 Test Scores: Mean=69%, s.d.=8%</p> <p>Give two valid comparisons.</p>
7	Factorise fully $2y^2 - 30y - 68$
8	A patient gets 250mm of a drug at 3pm. Every hour the amount of blood decreases by 20%. How much is in the blood at 6pm?
9	 <p>Find the length of SW.</p>
10	Describe the types of roots this quadratic has: $y = 3x^2 + 2x$

Homework Sheet 10

Mark:

<p>1 Jamie is baking cakes for a party. Each cake needs $\frac{2}{5}$ block of butter. If he has 7 blocks of butter how many cakes can he make?</p>	
<p>2 Find the equation of a straight line between $(-8, 3)$ and $(-4, -5)$.</p>	
<p>3 Express $p^3(p^{-3} - \sqrt{p})$ in simplest form.</p>	
<p>4 Solve for x: $\frac{3(x-1)}{5} = \frac{x+1}{2}$</p>	
<p>5 Solve $\sin^2 x = \frac{1}{4}$ for $0 \leq x \leq 360$</p>	
<p>6 A cuboid has a volume of 1.98m^3. It has a length of 110cm and a breadth of 150cm. Find the height.</p>	
<p>7 Multiply out and simplify: $(x+2)^3$</p>	
<p>8 My microwave cost $\pounds 150$ (includes 17.5% VAT). How much did it cost before VAT was added?</p>	
<p>9  Find the length of AB.</p>	
<p>10 This garden has an area of 45m^2. Find x.</p> 	

How to Pass NS

#1

1. $3\frac{1}{3} - 2\frac{4}{5}$

$$1 \left(\frac{5}{15} - \frac{12}{15} \right)$$

$$\frac{20}{15} - \frac{12}{15} = \frac{8}{15}$$

2. $(2, -3)(3, 9)$

$$m = \frac{9 - (-3)}{3 - 2} = 12$$

$$y - b = m(x - a)$$

$$y - 9 = 12(x - 3)$$

$$y - 9 = 12x - 36$$

$$y = \underline{12x - 27}$$

3. $m^5 \times m^{-9} = m^{-4} = \frac{1}{m^4}$

4. $k = \frac{mn^2}{p}$

$$kp = mn^2$$

$$m = \frac{kp}{n^2}$$

5. $4 \sin x = 2$

$$\sin x = \frac{1}{2}$$

$$x = \underline{30^\circ}, \underline{150^\circ}$$

7. $2t^2 - 18$
 $2(t^2 - 9)$
 $2(t+3)(t-3)$

6. $\bar{x} = \frac{30}{5} = 6$

$$SD = \sqrt{\frac{26}{5-1}}$$

$$= \underline{2.55}$$

3	-3	9
4	-2	4
6	0	0
8	2	4
9	3	9
0	Σ	26

8. 74000×1.065^3

$$= \underline{\underline{\text{R } 89388.27}}$$

9. Longa Start
 82^2 $80^2 + 18^2$
6724 6724

Yes...

10. $x^2 - 2x - 15 = 0$

$$(x-5)(x+3) = 0$$

$$x = \underline{5} \quad x = \underline{-3}$$

#2

1. $14 \cdot 3 + 8 \cdot 2 \times 30$

$$8 \cdot 2 \times 10 = 82$$
$$\begin{array}{r} \times 3 \\ \hline 246 \end{array}$$

$$\begin{array}{r} 246 \\ + 14 \cdot 3 \\ \hline \underline{260 \cdot 3} \end{array}$$

2. $m = \frac{4-8}{6-0}$

$$m = -\frac{4}{6} = -\frac{2}{3}$$

$$y-b = m(x-a)$$
$$y = -\frac{2}{3}(x-8)$$
$$y = -\frac{2}{3}x + \frac{24}{3}$$

3. $\frac{\sqrt{12}}{\sqrt{60}} = \frac{2\sqrt{3}}{2\sqrt{15}} = \frac{\sqrt{3}}{\sqrt{15}}$

5. $5 \tan x + 3 = 4$

$$\tan x = \frac{1}{5}$$

$$x = \underline{11.3^\circ}, \underline{191.3^\circ}$$

4. $P = \frac{3r^2}{y}$

$$Py = 3r^2$$

$$r^2 = \frac{Py}{3}$$

$$r = \underline{\sqrt{\frac{Py}{3}}}$$

6. $x = \frac{-7 \pm \sqrt{7^2 - (4 \times 3 \times (-4))}}{2 \times 6}$

$$= \frac{-7 \pm \sqrt{49 + 48}}{12}$$

$$= \frac{-7 \pm \sqrt{97}}{12}$$

$$x = 1.424 \dots$$

$$x = \underline{1.42}$$

$$x = -8.424 \dots$$

$$x = \underline{-8.42}$$

7. $3(x^2 + 3x - 10)$

$$3(x+5)(x-2)$$

8. $70\% = 336$

$$10\% = 48$$

$$100\% = \underline{480 \text{ ml}}$$

9. $(x+3)^2 = x^2 + 6^2$

$$x^2 + 6x + 9 = x^2 + 36$$

$$6x = 27$$

$$x = \underline{4\frac{1}{2}}$$

10. $2x^2 - 9x - 5 = 0$

$$(2x+1)(x-5) = 0$$

$$x = \underline{-\frac{1}{2}} \quad x = \underline{5}$$

#3

1. $4\frac{2}{5} \div \frac{1}{4}$

$\frac{22}{5} \times \frac{4}{1}$

$\frac{88}{5} = \underline{17\frac{3}{5}}$

2. $m = 4 \quad (3, -5)$

$y - b = m(x - a)$

$y + 5 = 4(x - 3)$

$y + 5 = 4x - 12$

$y = \underline{4x - 17}$

3. $a^{\frac{1}{2}}(a^{\frac{1}{2}} - 2)$

$\underline{a^1 - 2a^{\frac{1}{2}}}$

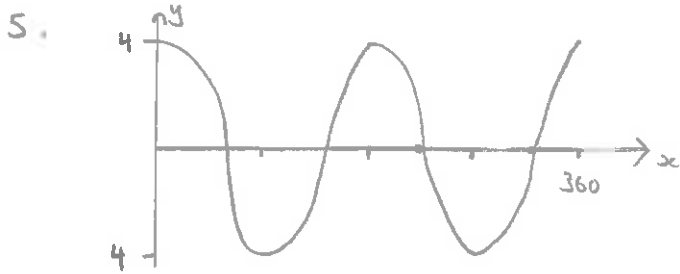
4. $x - 2(x + 1) = 8$

$x - 2x - 2 = 8$

$-x - 2 = 8$

$-x = 10$

$\underline{x = -10}$



7. $(2x + 3)^2 - 3(x^2 - 6)$

$4x^2 + 12x + 9 - 3x^2 + 18$

$\underline{x^2 + 12x + 27}$

6. $r = 5 \quad V = \frac{4}{3}\pi r^3$

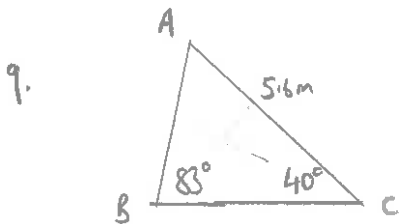
$V = \frac{4}{3} \times 3.14 \times 5^3$

$V = 523.3$

$V = \underline{520 \text{ cm}^3}$

8. 16000×0.925^4

$= \underline{11713.51}$



$\frac{AB}{\sin 40} = \frac{5.6}{\sin 83}$

$AB = \frac{5.6}{\sin 83} \times \sin 40$

$AB = \underline{3.6 \text{ m}}$

10. $a = 5 \quad b = -7 \quad c = -2$

$b^2 - 4ac$

$49 - (4 \times 5 \times -2)$

$49 - (-40)$

$89 \quad b^2 - 4ac > 0$

2 real + distinct roots

#4.

1. $\frac{2 \cdot 3 + 2 \cdot 1 \cdot 5}{2^3}$

$\frac{2 \cdot 3 + 10 \cdot 5}{8} = \frac{12 \cdot 8}{8}$

$8 \sqrt[0 \ 1 \cdot 6]{1 \ 2 \cdot 8} = \underline{\underline{1 \cdot 6}}$

2. $(-2, 5)$

$3x + 10$

$3(-2) + 10$

$= \underline{\underline{4 \quad No}}$

4. $(x+4)(3x-1)$

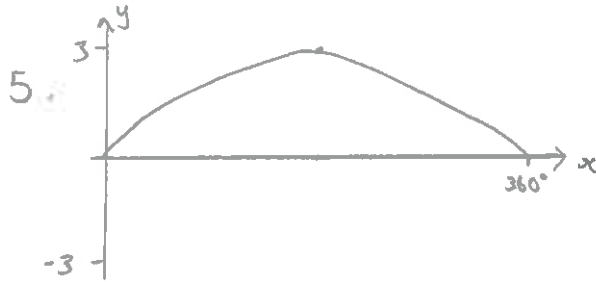
$3x^2 - x + 12x - 4$

$3x^2 + 11x - 4$

3. $2\sqrt{20} - 3\sqrt{5}$

$4\sqrt{5} - 3\sqrt{5}$

$\underline{\underline{\sqrt{5}}}$



6. $3x^2 - 11x + 1 = 0$

$x = \frac{+11 \pm \sqrt{11^2 - (4 \times 3 \times 1)}}{2 \times 3}$

$x = \frac{11 \pm \sqrt{121 - 12}}{6}$

$x = \frac{11 \pm \sqrt{109}}{6}$

$x = 10.720 \quad x = 0.279...$

$x = \underline{\underline{10.72}} \quad x = \underline{\underline{0.28}}$

7. $3x^2 - 14x + 15$
 $(3x-5)(x-3)$

8. $80\% = 3.60$

$10\% = 3.60 \div 8 = 0.45$

$100\% = 0.45 \times 10 = \underline{\underline{4.50}}$

9. $A = \frac{1}{2} ab \sin C$

$A = \frac{1}{2} \times 40 \times 40 \times \sin 60$

$A = \underline{\underline{692.8 \text{ cm}^2}}$

10. $y = (x-3)(x+2)$

Roots $y=0 \quad (x-3)(x+2)=0$

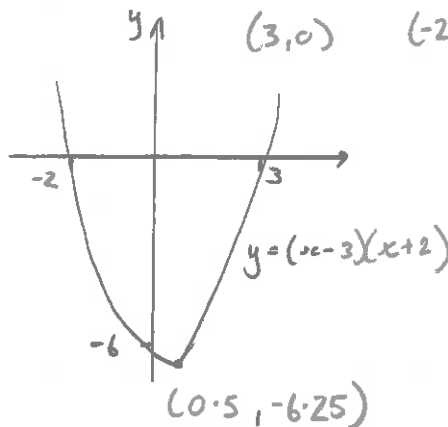
$x=3 \quad x=-2$

$(3,0) \quad (-2,0)$

Y-axis - $x=0$

$y = (-3)(2)$

$y = -6 \quad (0,-6)$



Min TP $x = 0.5$

$y = (0.5-3)(0.5+2)$

$y = (-2.5)(2.5)$

$y = -6.25$

$(0.5, -6.25)$

#5

$$\begin{aligned}
 1. \quad f(x) &= x^2 + 3x \\
 f(-2) &= (-2)^2 + 3(-2) \\
 &= 4 - 6 \\
 &= \underline{\underline{-2}}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad x^2 &= 1^2 + 7^2 \\
 &= 1 + 49 \\
 &= 50 \\
 x &= \sqrt{50} \\
 x &= \underline{\underline{5\sqrt{2}}}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad 4 \tan x &= 2 \quad (0 \leq x \leq 180) \\
 \tan x &= \frac{1}{2} \\
 x &= \underline{\underline{26.6^\circ}}
 \end{aligned}$$

$$\begin{aligned}
 7. \quad (3x+1)(x^2-5x+4) \\
 3x^3 - 15x^2 + 12x + x^2 - 5x + 4 \\
 \underline{\underline{3x^3 - 14x^2 + 7x + 4}}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad (1.34 \times 10^9) \times 1.05^6 \\
 &= 1795728158 \\
 &= \underline{\underline{1.8 \times 10^9}}
 \end{aligned}$$

$$10. \quad 2x^2 - 2x + 3 = 0$$

$$\begin{aligned}
 b^2 - 4ac \\
 (-2)^2 - 4 \times 2 \times 3 \\
 4 - 24 \\
 -20
 \end{aligned}$$

As $b^2 - 4ac < 0$ there are no real roots/solutions.

2. C

- Positive gradient
- Negative y-axis intercept

$$\begin{aligned}
 4. \quad 2x + 15 &\leq 3(x - 1) \\
 2x + 15 &\leq 3x - 3 \\
 -x &\leq -18 \\
 x &\geq \underline{\underline{18}}
 \end{aligned}$$

$$6. \quad \bar{x} = \frac{44}{4} = 11$$

2	-9	81
8	-3	9
14	3	9
20	9	81
0	Σ	180

$$SD = \sqrt{\frac{180}{4-1}}$$

$$= \underline{\underline{7.75}}$$

$$\begin{aligned}
 9. \quad 6^2 &= x^2 + x^2 \\
 36 &= 2x^2 \\
 18 &= x^2 \\
 x &= \sqrt{18} \\
 x &= \underline{\underline{3\sqrt{2}}}
 \end{aligned}$$

#6

$$1. \frac{1}{2} \left(\frac{2}{7} - \frac{5}{9} \right)$$

$$= \frac{1}{2} \left(\frac{9}{7} - \frac{5}{9} \right)$$

$$= \frac{1}{2} \left(\frac{81}{63} - \frac{35}{63} \right)$$

$$= \frac{1}{2} \left(\frac{46}{63} \right) = \underline{\underline{\frac{23}{63}}}$$

$$3. k^2 (3k + 2k^{-4} - k^{1/2})$$

$$= \underline{\underline{3k^3 + 2k^{-2} - k^{5/2}}}$$

$$5. a = \underline{\underline{5}} \quad b = \underline{\underline{3}}$$

$$6. V = \pi r^2 h$$

$$V = 3.14 \times 4^2 \times 10$$

$$V = 502.4 \text{ cm}^3$$

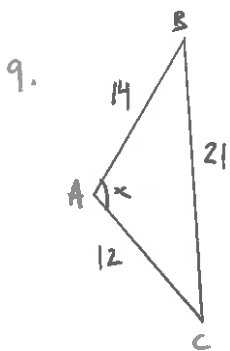
$$= 502.4 \text{ ml}$$

No as 502.4 > 500 ml

$$8. 108\% = 324$$

$$1\% = 324 \div 108 = 3$$

$$100\% = 3 \times 100 = \underline{\underline{300}}$$



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{12^2 + 14^2 - 21^2}{2 \times 12 \times 14}$$

$$\cos A = -0.3005 \dots$$

$$A = \underline{\underline{107.5^\circ}}$$

$$2. m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$5 = \frac{a - 8}{2 - 4}$$

$$5 = \frac{a - 8}{-2}$$

$$-10 = a - 8$$

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

$$4. 5W - J^2 = \frac{4}{L}$$

$$5W = \frac{4}{L} + J^2$$

$$W = \underline{\underline{\frac{4}{5L} + \frac{J^2}{5}}}$$

$$7. 10x^2 - 50x + 240$$

$$10(x^2 - 5x + 24)$$

$$\underline{\underline{10(x - 8)(x + 3)}}$$

$$10. y = (2x - 5)(x + 1.5)$$

$$\text{Roots } (2x - 5)(x + 1.5) = 0$$

$$x = \frac{5}{2} \quad x = -1.5 \left(-\frac{3}{2}\right)$$

$$\left(\frac{5}{2}, 0\right) \quad \left(-\frac{3}{2}, 0\right)$$

$$y \text{ axis } x = 0$$

$$y = (-5)(1.5)$$

$$y = -7.5 \quad (0, -7.5)$$

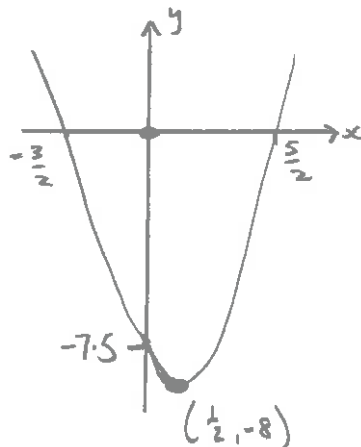
$$\text{Min TP } x = \frac{1}{2}$$

$$y = (2(\frac{1}{2}) - 5)(\frac{1}{2} + 1.5)$$

$$= (-4)(2)$$

$$= -8$$

$$\left(\frac{1}{2}, -8\right)$$



#7

$$1. \quad 7 \overline{) 0.571}$$

$$\underline{0.571}$$

$$2. \quad (0, -3)(-2, -11)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-11 - (-3)}{-2 - 0}$$

$$= \frac{-8}{-2} = 4$$

$$y - b = m(x - a)$$

$$y - (-3) = 4(x - 0)$$

$$y + 3 = 4x$$

$$\underline{\underline{y = 4x - 3}}$$

$$3. \quad 27^{2/3} = \sqrt[3]{27^2}$$

$$= 3^2 = \underline{\underline{9}}$$

$$4. \quad 3x + 1 = \frac{x - 5}{2}$$

$$6x + 2 = x - 5$$

$$5x = -7$$

$$\underline{\underline{x = -\frac{7}{5}}}$$

$$5. \quad \underline{\underline{a = 4}}$$

$$6. \quad \bar{x} = \frac{10}{5} = 2$$

$$s_D = \sqrt{\frac{12}{5-1}}$$

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

$$(b) \text{ S.D. } = \underline{\underline{\sqrt{3}}}$$

1	-1	1
1	-1	1
1	-1	1
2	0	0
5	$\frac{3}{0}$	$\frac{9}{\underline{\underline{\Sigma 12}}}$

$$7. \quad 3(x^2 - 5x + 1) - 2x(x - 4)$$

$$3x^2 - 15x + 3 - 2x^2 + 8x$$

$$\underline{\underline{x^2 - 7x + 3}}$$

$$9. \quad \cos x = \frac{1100^2 + 950^2 - 1000^2}{2 \times 1100 \times 950}$$

$$\cos x = 0.532 \dots$$

$$x = \underline{\underline{57.8^\circ}}$$

8. Assume $h = 10 \text{ cm}$

$$V = \frac{1}{3} \pi r^2 h$$

$$= \frac{1}{3} \times 3.14 \times 3^2 \times 10$$

$$= \underline{\underline{94.2 \text{ cm}^3}}$$

$$V = \pi r^2 h$$

$$= 3.14 \times 2^2 \times 10$$

$$= \underline{\underline{125.6 \text{ cm}^3}}$$

CYLINDER

$$10. \quad \text{M.I.N.T.P. } (\underline{\underline{6, 2}})$$

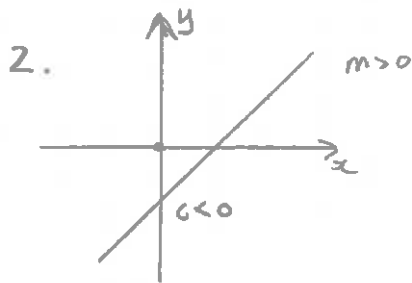
$$\underline{\underline{x = 6}}$$

#8

$$1. \quad \begin{array}{l} 10\% = 8.45 \\ 30\% = 8.45 \\ \hline \times 3 \\ \hline 25.35 \\ \hline \end{array}$$

$$5\% = 4.23 \text{ (rounded to nearest penny)}$$

$$35\% = 25.35 + 4.23 = \underline{\underline{29.58}}$$



$$4. \quad \frac{3}{a} + \frac{5}{a-1} = \frac{3(a-1)}{a(a-1)} + \frac{5a}{a(a-1)}$$

$$= \frac{3(a-1) + 5a}{a(a-1)} = \frac{8a-3}{\underline{\underline{a(a-1)}}}$$

$$3. \quad \frac{ab^b}{a^2b^3} = \frac{\underline{\underline{b^3}}}{a}$$

$$5. \quad \begin{array}{l} 4\sin x = 2\sin x + 1 \\ 2\sin x = 1 \\ \sin x = \frac{1}{2} \\ x = 30^\circ, 180-30 \\ x = \underline{\underline{30^\circ}}, \underline{\underline{150^\circ}} \end{array}$$

$$\frac{S}{T} \bigg| \frac{A}{C}$$

$$6. \quad 3x^2 + 2x - 10 = 0$$

$$x = \frac{-2 \pm \sqrt{2^2 - (4 \times 3 \times (-10))}}{2 \times 3}$$

$$x = \frac{-2 \pm \sqrt{124}}{6}$$

$$7. \quad \begin{array}{l} 10 \cdot 2^2 - 9 \cdot 8^2 \\ (10 \cdot 2 + 9 \cdot 8)(10 \cdot 2 - 9 \cdot 8) \end{array} \quad 20 \times 0.4 = \underline{\underline{8}}$$

$$8. \quad \begin{array}{l} 112.5\% = 450 \\ 1\% = 450 \div 112.5 = 4 \\ 100\% = 4 \times 100 = \underline{\underline{400g.}} \end{array}$$

$$\begin{array}{ll} x = 1.522 & x = -2.189 \\ x = \underline{\underline{1.52}} & x = \underline{\underline{-2.19}} \end{array}$$

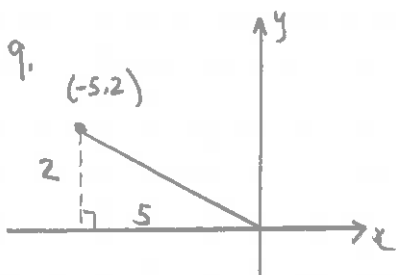
$$10. \quad y = (x-a)^2 + b \quad (-3, -4)$$

$$y = (x+3)^2 - 4$$

$$\underline{\underline{a=3}} \quad \underline{\underline{b=-4}}$$

$$\begin{array}{l} C \rightarrow x=0 \\ y = (0+3)^2 - 4 \\ = 9-4 \\ = 5 \end{array}$$

$$C(\underline{\underline{0,5}})$$



$$\begin{array}{l} x^2 = 5^2 + 2^2 \\ = 25 + 4 \\ = 29 \\ x = \sqrt{29} \\ = \underline{\underline{5.39}} \end{array}$$

#9

$$1. \quad \frac{3}{5} + \frac{5}{8} + \frac{3}{4} + \frac{1}{2}$$

$$\frac{24}{40} + \frac{25}{40} + \frac{30}{40} + \frac{20}{40}$$

$$= \frac{99}{40} \div 4$$

$$= \frac{99}{40} \times \frac{1}{4} = \frac{99}{160}$$

$$4. \quad A = \frac{1}{2} h(a+b)$$

$$2A = h(a+b)$$

$$h = \frac{2A}{(a+b)}$$

$$2. \quad 6x + 2y = 5 \quad m = -3$$

$$2y = -6x + 5$$

$$y = -3x + \frac{5}{2} \quad c = (0, \frac{5}{2})$$

$$3. \quad \frac{12}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$$

$$5. \quad y = 0 \text{ at Q and R}$$

$$5 \sin x - 4 = 0 \quad \frac{\sqrt{S/A}}{T/C}$$

$$\sin x = \frac{4}{5}$$

$$x = 53.1^\circ, 180 - 53.1$$

$$x = \underline{53.1^\circ}, \underline{126.9^\circ}$$

6. 4M1 have a higher mean. This means that on average, pupils in 4M1 scored higher. 4M1 have a higher S.D. This means that the scores of pupils in 4M1 are more varied.

$$7. \quad 2y^2 - 30y - 68$$

$$2(y^2 - 15y - 34)$$

$$2(y-17)(y+2)$$

$$8. \quad 3 \text{ hours. } 250 \times 0.8^3 = \underline{128 \text{ mm}}$$

$$9. \quad SV: \sin 34 = \frac{SV}{13.1}$$

$$SV = 13.1 \times \sin 34$$

$$SV = 7.3$$

$$SW: \cos 25 = \frac{SW}{7.3}$$

$$SW = 7.3 \cos 25$$

$$SW = \underline{6.6 \text{ cm}}$$

$$10. \quad y = 3x^2 + 2x \quad a=3 \quad b=2 \quad c=0$$

$$b^2 - 4ac$$

$$2^2 - (4 \times 3 \times 0)$$

$$\underline{4}$$

As $b^2 - 4ac > 0$ there are 2 real distinct roots

#10

$$1. \quad 7 \div \frac{2}{5}$$

$$\frac{7}{1} \times \frac{5}{2} = \frac{35}{2} = 17\frac{1}{2}$$

17 cakes

$$3. \quad p^3(p^{-3} - \sqrt{p})$$

$$p^3(p^{-3} - p^{\frac{1}{2}})$$

$$p^0 - p^{\frac{3}{2}} = 1 - \sqrt{p^3}$$

$$4. \quad \frac{3(x-1)}{5} = \frac{x+1}{2}$$

$$6(x-1) = 5(x+1)$$

$$6x - 6 = 5x + 5$$

$$\underline{x = 11}$$

$$7. \quad (x+2)(x+2)(x+2)$$

$$(x+2)(x^2+4x+4)$$

$$x^3+4x^2+4x+2x^2+8x+8$$

$$\underline{x^3+6x^2+12x+8}$$

$$9. \quad x^2 = 24^2 - 11^2$$

$$x^2 = 576 - 121$$

$$x^2 = 455$$

$$x = 21.3$$

$$AB = 21.3 \times 2 = \underline{42.6 \text{ cm}}$$

$$2. \quad m = \frac{-5-3}{-4-(-8)}$$

$$= \frac{-8}{4} = \underline{-2}$$

$$y-b = m(x-a)$$

$$y-3 = -2(x-(-8))$$

$$y-3 = -2x-16$$

$$y = \underline{-2x-13}$$

$$5. \quad \sin^2 x = \frac{1}{4}$$

$$\sin x = \frac{1}{2}$$

$\sqrt{S/A}$
$\sqrt{T/C}$

$$x = 30^\circ, 180-30, 180+30, 360-30$$

$$x = \underline{30^\circ}, \underline{150^\circ}, \underline{210^\circ}, \underline{330^\circ}$$

$$6. \quad V = l \times b \times h$$

$$1.98 = 1.1 \times 1.5 \times h$$

$$h = \frac{1.98}{(1.1 \times 1.5)}$$

$$h = \underline{1.2 \text{ m}}$$

$$8. \quad 117.5\% = 150$$

$$1\% = 150 \div 117.5 = 1.27$$

$$100\% = 1.27 \times 100 = \underline{127}$$

$$10. \quad (x+7)(x+3) = 45$$

$$x^2+7x+3x+21 = 45$$

$$x^2+10x-24 = 0$$

$$(x+12)(x-2) = 0$$

$$\cancel{x = -12} \quad \underline{x = 2}$$