	November A/B Revision 3 – Non Calculator	**20**
1	Evaluate $\quad 6\frac{1}{5} - 1\frac{2}{3}$	**2**
2	Solve the inequality $\qquad 9 - 3(x - 1) > 15$	**3**
3	Find the equation of the straight line joining the points (-1, 5) and (2, 11). Give the equation of the straight line in its simplest form.	**3**
4	Determine the nature of the roots of the function $f(x) = 4x^2 - 3x + 1$	**2**
5	Express $\quad \sqrt{50} - \sqrt{2} + \sqrt{18}$ as a surd in the simplest form	**3**
6	7 200 tickets were sold for a sporting event. 10% of the tickets were not sold. How many tickets were available to buy for this event?	**3**
7	(a) Factorise (i) $\quad 3y^2 + 6y$ (i) $\quad y^2 + y - 2$	**2**
	(b) Hence express $\dfrac{3y^2 + 6y}{y^2 + y - 2}$ in its simplest form	**2**
	November A/B Revision 3 – Calculator	**30**
1	A cereal manufacturer intends to reduce the sugar content in all of their products by 6% over the next three years. The current sugar content in their leading brand is 47 grams in every 100 grams of cereal. Calculate the sugar content per 100 grams in this same cereal after 3 years.	**3**
2	A cylindrical drinks can is 15 centimetres high and 6.5 centimetres in diameter. A new design for the can has the same volume, but has a reduced height of 12 centimetres. What is the diameter of the new can? Give your answer correct to **1 decimal place**	**3**

3 A fan is made from four identical plastic blades.
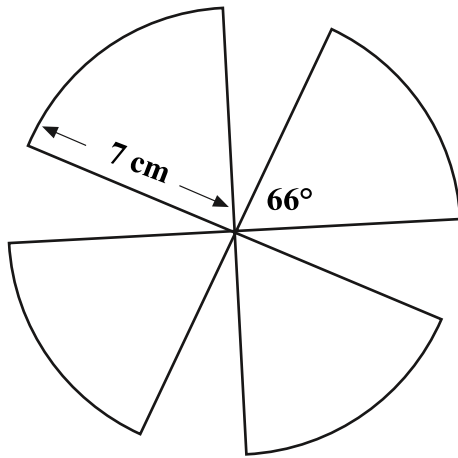
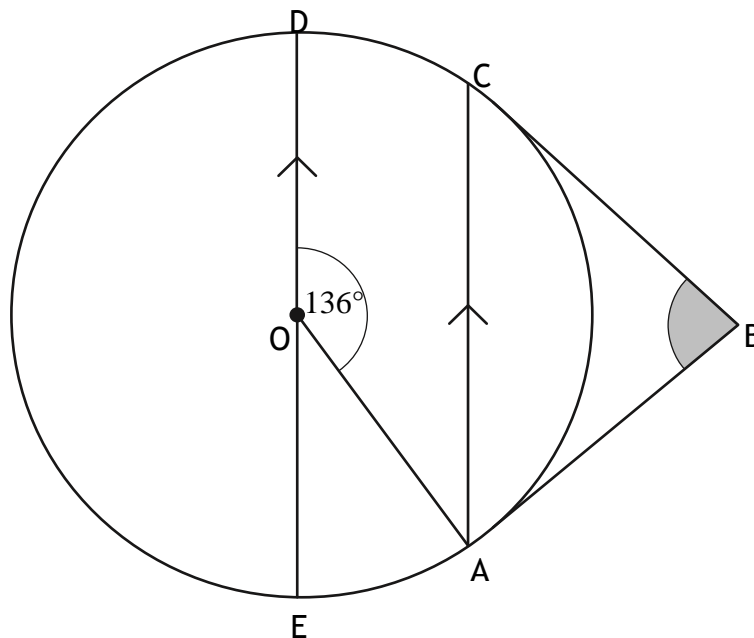

Each blade is a sector of a circle with a radius of 7 cm.

The angle at the centre of each sector is 66°.

Calculate the **total** area of plastic required to make the blades for this fan.

4

4 The diagram below shows a circle with a centre O.

On the diagram

- AB and CB are tangents to the circle
- AC and ED are parallel
- Angle AOD is 136°

Calculate the size of angle ABC

3

5 In a local farm shop honey is sold in two different sizes.
These jars are mathematically similar.

6 cm

7 cm

The smaller jar is 6 cm high and weighs 300 grams.
The larger jar is 7 cm high. What is the weight of the larger jar?

3

6 In the diagram two straight lines L_1 and L_2 meet at point P.

L_1 $5x - 2y = 5$

P

x

0

L_2 $2x + 3y = 21$
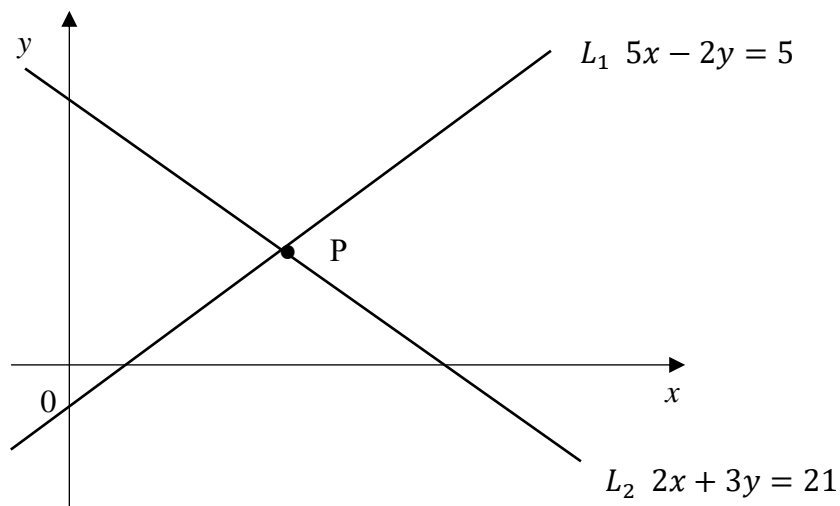
Line L_1 has equation $5x - 2y = 4$
Line L_2 has equation $2x + 3y = 10$

Algebraically find the coordinates of point P

5

7 The diagram below shows the circular cross section of an oil tanker.
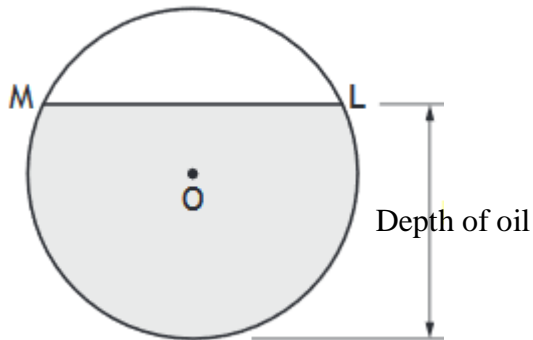
The radius of the circle, centre O is 1.5 metres.

The width of the surface of the oil in the tank, represented by ML in the diagram is 2.3 metres.

Calculate the depth of the oil in the rank **4**

8 The height of this triangle is $(3x - 1)$ centimetres and the base is $2x$ centimetres

$(3x - 1)$ cm

$2x$ cm **5**

If the area of the triangle is 24 square centimetres calculate the value of x

	Revision 3 Non Calculator Answers
1	$6\frac{1}{5} - 1\frac{2}{3} = 5\left(\frac{1}{5} - \frac{2}{3}\right) = 5\left(\frac{3}{15} - \frac{10}{15}\right) = 5\left(-\frac{7}{15}\right) = \mathbf{4\frac{8}{15}}$ or $\mathbf{\frac{68}{15}}$
2	$9 - 3x + 3 > 15 \quad \rightarrow \quad 12 - 3x > 15 \quad \rightarrow \quad -3 > 3x \quad \mathbf{-1 > x}$ or $\mathbf{x < -1}$
3	Gradient is $\frac{6}{3} = 2$ either use $y - 11 = 2(x - 2)$ so $y = 2x + 7$ or $y = mx + c, \quad 11 = 2(2) + c, \quad c = 7 \quad \mathbf{y = 2x + 7}$
4	$b^2 - 4ac = (-3)^2 - 4 \times 4 \times 1 = -7, \quad b^2 - 4ac < 0$ **so there are no real roots**
5	$\sqrt{50} - \sqrt{2} + \sqrt{18} = 5\sqrt{2} - \sqrt{2} + 3\sqrt{2} = \mathbf{7\sqrt{2}}$
6	$7200 = 90\%$ so $\mathbf{8000 = 100\%}$
7	(a) $3y(y + 2)$ and $(y + 2)(y - 1)$ (b) $\dfrac{3y(y+2)}{(y+2)(y-1)} = \dfrac{\mathbf{3y}}{\mathbf{(y-1)}}$

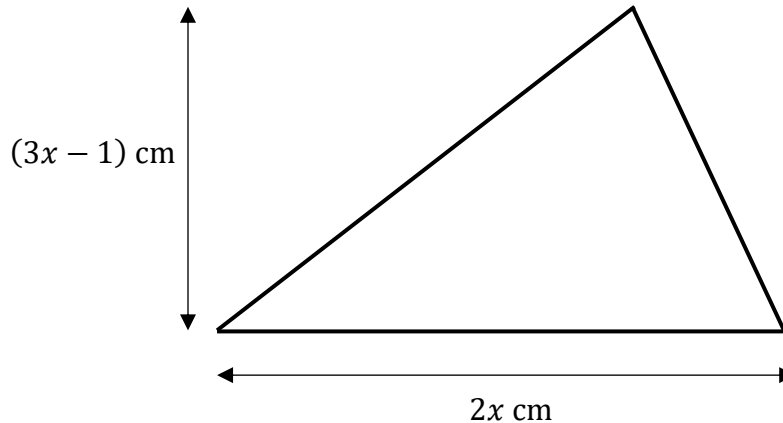|	Revision 3 Calculator Answers
1	$47 \times 0.94^3 = 39.037448$ **39 grams in every 100g miles**
2	$V(\text{original}) = \pi \times 3.25^2 \times 15 = 497.75\text{cm}^3$ $V(\text{new})$ $497.75 = \pi \times r^2 \times 12, \quad r^2 = 13.2.., \quad r = 3.63..$ diameter is $\mathbf{7.3\ cm}$
3	Area of sector $= \frac{66}{360} \times \pi \times 7^2 = 28.22197\ cm^2$ Area of fan is $4 \times 28.22 = 112.388 = \mathbf{113\ cm^2}$.
4	$EOA = 180° - 136° = 44° = OAC, \quad CAB = 90° - 44° = 46°$ $\mathbf{ABC = 180° - 2 \times 46° = 88°}$
5	$LSF = \frac{7}{6}, \quad VSF = \left(\frac{7}{6}\right)^3$ Weight of larger jar is $300 \times \left(\frac{7}{6}\right)^3 = \mathbf{476\ grams}$
6	Simultaneous equations $5x - 2y = 5$ $2x + 3y = 21$ Scale $15x - 6y = 15$ $\underline{4x + 6y = 42}$ $19x = 57$ $x = 3, y = 5 \quad \mathbf{P(3,5)}$
7	Establish a right-angled triangle 1.1 m 1.5 m Use Pythagoras $PA = \sqrt{1.5^2 - 1.15^2} = 0.96306\ m$ Depth of oil is $1.5 + 0.96 = \mathbf{2.46\ metres}$
8	Area of the triangle is $\frac{1}{2} \times 2x \times (3x - 1) = 24$ $3x^2 - x = 24$ $3x^2 - x - 24 = 0$ $(3x + 8)(x - 3) = 0$ $x = -\frac{8}{3}$ or $x = 3, \quad \mathbf{x = 3\ cm}$

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