Maths Points

Junior and Leaving Cert

LCOL BASIC SKILLS
PACK 3

Leaving Cert Ordinary Level

Maths Points

Junior and Leaving Cert

Solve for x and y

$$x - y = 4$$
$$2x + y = 5$$

Ensure the equations are both in form $ax + by = c$.

Label the Equations →

$$x - y = 4 \quad \rightarrow \quad ①$$
$$2x + y = 5 \quad \rightarrow \quad ②$$

Add the lines so that we **eliminate** y.

①
②

$$x - y = 4$$
$$\underline{2x + y = 5}$$
$$3x = 9$$
$$x = \frac{9}{3}$$
$$x = 3$$

Sub $x = 3$ back into either original equation to find y.

② $\quad 2x + y = 5$

$$2(3) + y = 5 \quad \leftarrow \quad x = 3$$
$$6 + y = 5$$
$$y = 5 - 6$$
$$y = -1$$

$$x = 3, y = -1$$

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A wax candle is in the shape of a right circular cone.
The height of the candle is 7 cm and the diameter of the base is 6 cm.

Find the volume of the wax candle, correct to the nearest cm^3

The formula for **Volume of a Cone** is on **page 10** of the Maths Formulae Book.

Volume of a Cone

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

Height = 7 cm
Diameter = 6 cm
Radius = 3 cm

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

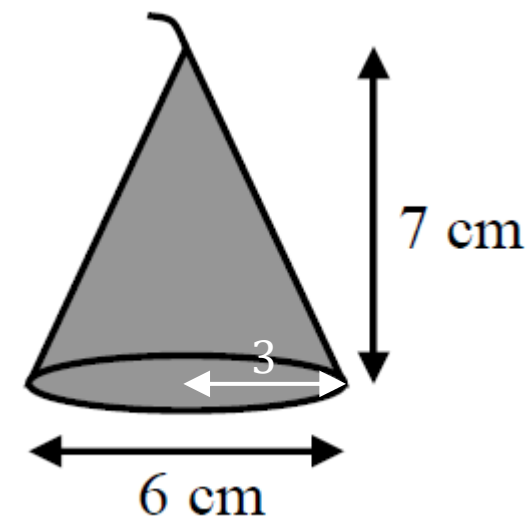$$V = \frac{1}{3}\pi (3)^2 (7)$$

$$V = 65.97$$

$$V = 66 \text{ cm}^3$$

Correct to the nearest cm^3.

7 cm

3

6 cm

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In a competition Mary has a probability of $\frac{1}{20}$ of winning, a probability of $\frac{1}{10}$ of finishing in second place, and a probability of $\frac{1}{4}$ of finishing in third place. If she wins the competition she gets €9000. If she comes second she gets €7000 and if she comes third she gets €3000. In all other cases she gets nothing. Each participant in the competition must pay €2000 to enter.

Find the **expected value** of Mary's loss if she enters the competition.

Expected Value

$$= \sum x.\,P(x)$$

To find expected value we multiply every possible outcome by the probability for that outcome and then add all these values together.

Expected Value

$$E(x) = \left(\frac{1}{20}\right)(9000) + \left(\frac{1}{10}\right)(7000) + \left(\frac{1}{4}\right)(3000) - 2000$$
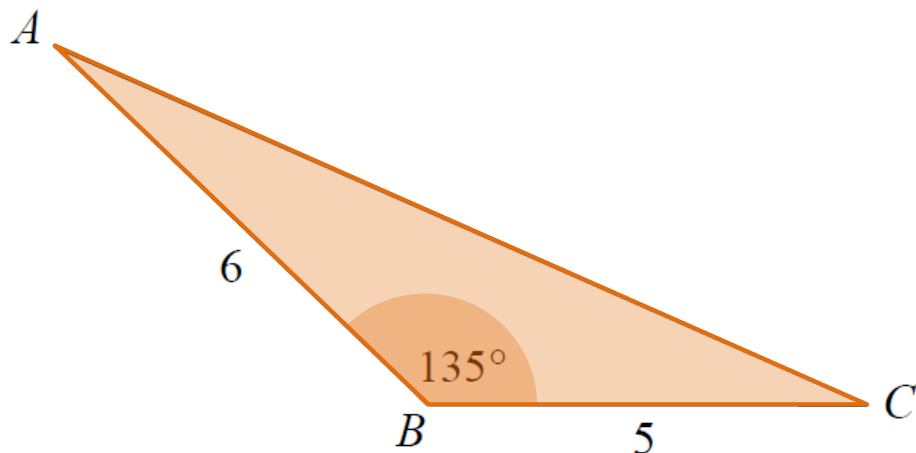
$$E(x) = 450 + 700 + 750 - 2000$$

$$E(x) = 1900 - 2000$$

$$E(x) = -100$$

Mary's expected loss would be €100 if she enters the competition.

In the triangle ABC, $|AB| = 6$ cm, $|BC| = 5$ cm and $|\angle ABC| = 135°$.

Calculate the area of the triangle, correct to the nearest square centimetre.

The **Area of a Triangle** formula is on page 16 of the Maths Formulae Book.

Area of Triangle

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

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

$$A = \frac{1}{2}(6)(5)\sin 135°$$

$$A = 10.607 \text{ cm}^2$$

$$A \approx 11 \text{ cm}^2$$

To calculate the area of a triangle using this formula you must have 2 sides and the angle BETWEEN them.

Correct to the nearest cm².

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The students decide to look at the heights of the males and the females in the class separately. The heights are given below:

Construct a back-to-back stem and leaf plot of the above data.

Males			Females		
173	180	174	167	161	160
175	178	176	157	164	172
180	171	170	168	149	161
187	176	166	167	167	171

Leaf	Stem	Leaf
	1 4	9
	1 5	7
6	1 6	0 1 1 4 7 7 7 8
8 6 6 5 4 3 1 0	1 7	1 2
7 0 0	1 8	

Key: 15 | 7 = 157 cm ← Must include key.

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