**Lesson 15**

**Perimeter, Area & Volume : Year 9**

*Calculator Needed*

**15.1 Test**

**Question 1**

Expand the brackets,

**( i )**

$(x + 7)(x + 9)$

**( ii )**

$(x + 11)^2$

**( iii )**

$(x - 4)(x - 15)$

**( iv )**

$(x + 11)(x - 6)$

**( v )**

$(x - 21)(x + 4)$

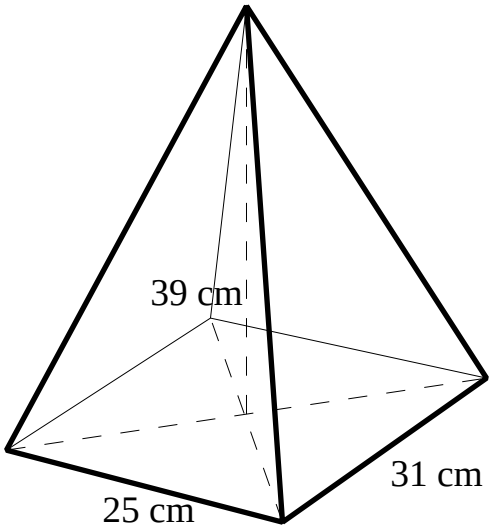
**( vi )**

$(x - 7)(x + 7)$

**[ 18 marks]**

**Question 2**

This pyramid has a rectangular base measuring 25 cm by 31 cm and is 39 cm high.




The Volume of a pyramid is given by the formula,

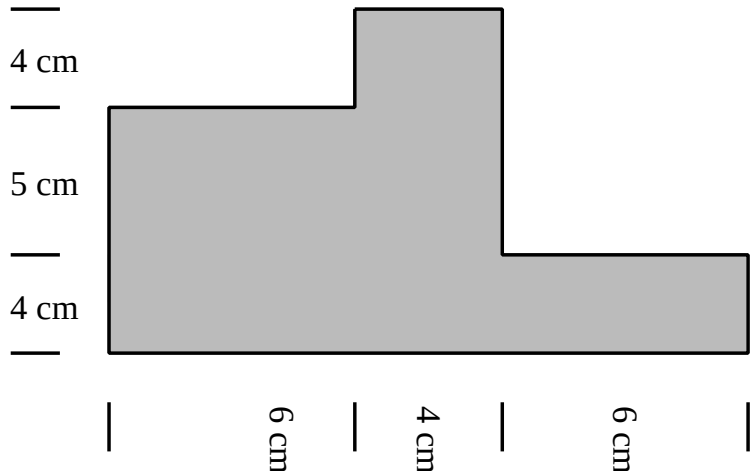
$$Volume = \frac{1}{3} \times Area\ of\ the\ Base \times Perpendicular\ Height$$

Use this formula to calculate the volume of the pyramid.

**[ 3 marks ]**

**Question 3**

What is the **PERIMETER** of this shape;




**[ 3 marks ]**

**Question 4**

Factorise,

**( i )**

$x^2 - 12x + 27$

**( ii )**

$x^2 + 16x + 63$

**( iii )**

$x^2 + 7x - 44$

**( iv )**

$x^2 - 3x - 28$

**[ 12 marks ]**

**Question 5**

An quadratic equation of the form,

$$a x^2 + b x + c = 0$$

can be solved by using the formula;

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Show how to use this formula to solve the following equation;

$$3x^2 + 2x - 5 = 0$$

**[ 8 marks ]**

**Question 6**

**Expand the brackets**

**( i )**

$(5x - 4)(3x - 2)$

**( ii )**

$(5x + 3)(11x + 6)$

**( iii )**

$(13x - 1)(3x + 2)$

**( iv )**

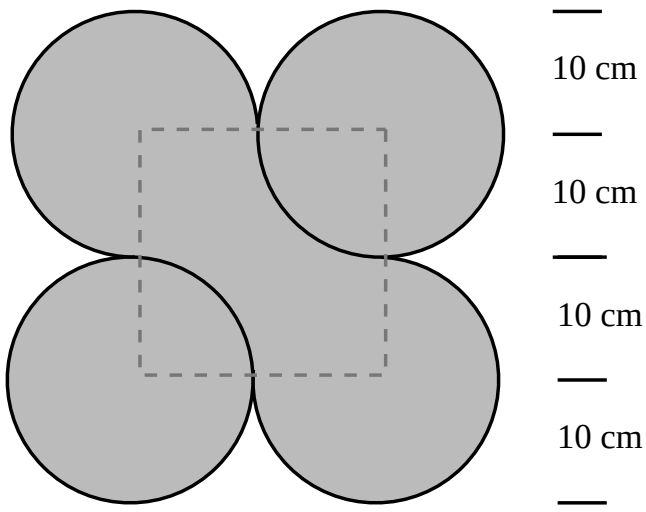
$(5x - 6)(7x + 4)$

**[ 12 marks ]**

**Question 7**

A Social Media company has designed the following logo for it's new Interconnect™ video messaging App.
It is a square with sides of length 20 cm with a three-quarter circle of radius 10 cm added to each corner.

What is the area of the shaded part of the logo ?




**[ 8 marks ]**

**Question 8**

Solve the following quadratic equations by first factorising the quadratic.
Be sure to use the words **EITHER** and **OR** as a part of your solution.

**( i )**

$x^2 + 11x + 30 = 0$

**( ii )**

$x^2 - 3x - 18 = 0$

**( iii )**

$x^2 - 18x + 32 = 0$

**( iv )**

$x^2 - 3x - 70 = 0$

**[ 12 marks ]**

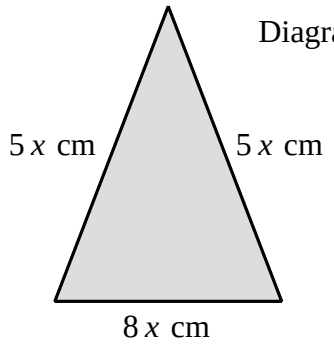
**Question 9**

A rectangle measures $( x + 3 )$ cm by $( x + 7 )$ cm.
It has an area of 96 $cm^2$
Find the dimensions of the rectangle, showing your working.

**[ 6 marks ]**

**Question 10**

A triangle has two equal sides of length $5x$ cm and one side of length $8x$ cm.




The perimeter of this triangle is 180 cm.

**( i )** Use this information to write down an equation in $x$.

**[ 2 mark ]**

**( ii )** Solve your equation to find the value of $x$.

**[ 2 marks ]**

**( iii )** Find the area of the triangle

**[ 3 marks ]**