**Lesson 14**

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

*Calculator Needed*

## 14.1 Revision

**Question 1**

Expand the brackets,

**( i )**

$(x + 11)(x + 9)$

**( ii )**

$(x + 7)^2$

**( iii )**

$(x - 4)(x - 5)$

**( iv )**

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

**( v )**

$(x - 14)(x + 2)$

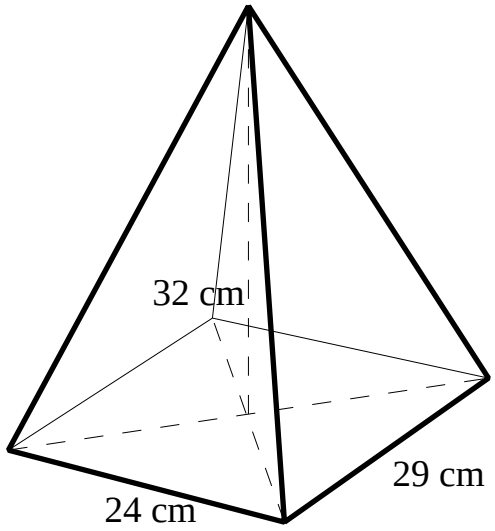
**( vi )**

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

**[ 18 marks]**

**Question 2**

This pyramid has a rectangular base measuring 24 cm by 29 cm and is 32 cm high.




The Volume of a pyramid is given by the formula,

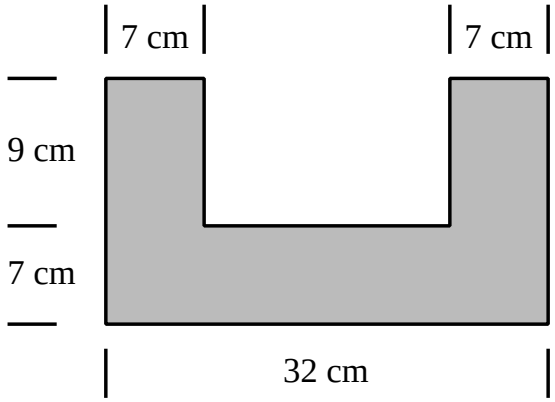
$$Volume = \frac{1}{3} \times Area\ of\ the\ Base \times Perpendicular\ Height$$

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 )**

$x^2 - 9x + 14$

**( ii )**

$x^2 + 17x + 72$

**( iii )**

$x^2 + 6x - 55$

**( iv )**

$x^2 - 7x - 18$

**[ 12 marks ]**

**Question 5**

An quadratic equation of the form,

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

can be solved by using the formula;

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

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

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

**[ 8 marks ]**

**Question 6**

**Expand the brackets**

**( i )**

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

**( ii )**

$(5x + 2)(8x + 7)$

**( iii )**

$(11x - 2)(3x + 1)$

**( iv )**

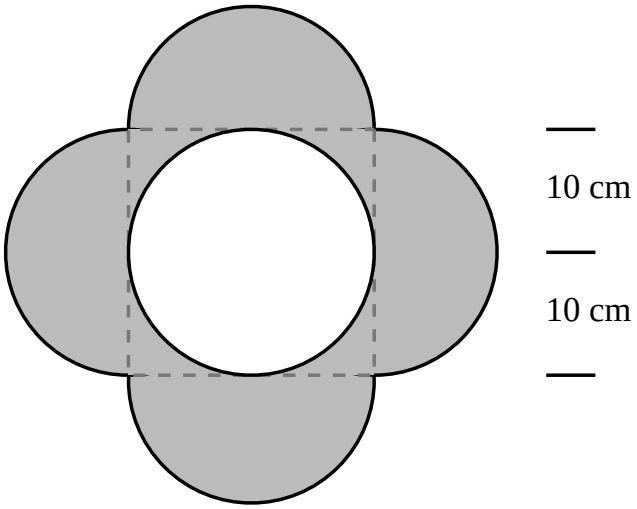
$(3x - 8)(4x + 3)$

**[ 12 marks ]**

**Question 7**

A computer company has designed the following logo for it's Flower Power™ range of tablet computers.
It is a square with sides of length 20 cm with a semi-circle or radius 10 cm added to each side and a full circle, also of radius 10 cm removed from the centre.

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 )**

$x^2 + 10x + 21 = 0$

**( ii )**

$x^2 - 6x - 16 = 0$

**( iii )**

$x^2 - 12x + 35 = 0$

**( iv )**

$x^2 + 3x - 88 = 0$

**[ 12 marks ]**

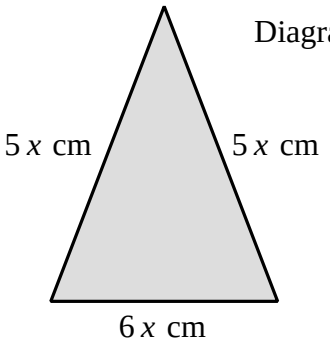
**Question 9**

A rectangle measures $( x + 3 )$ cm by $( x + 5 )$ cm.
It has an area of $48$ 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 $6x$ cm.




The perimeter of this triangle is 48 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 ]**

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