Family Name/ Surname: **Given Name(s):**

                                             Preferred Name:

Wycliffe College

Mathematics Entrance Test

Time allowed: 1 hour

Calculator Allowed

1.   (a)   Write as a power of 5

   (i) $5^4 \times 5^2$

   ....

   (ii) $5^9 \div 5^6$

   ....
   (Total 5 marks)

2.   (a)   Complete this table of values for $y = x^3 + x - 2$

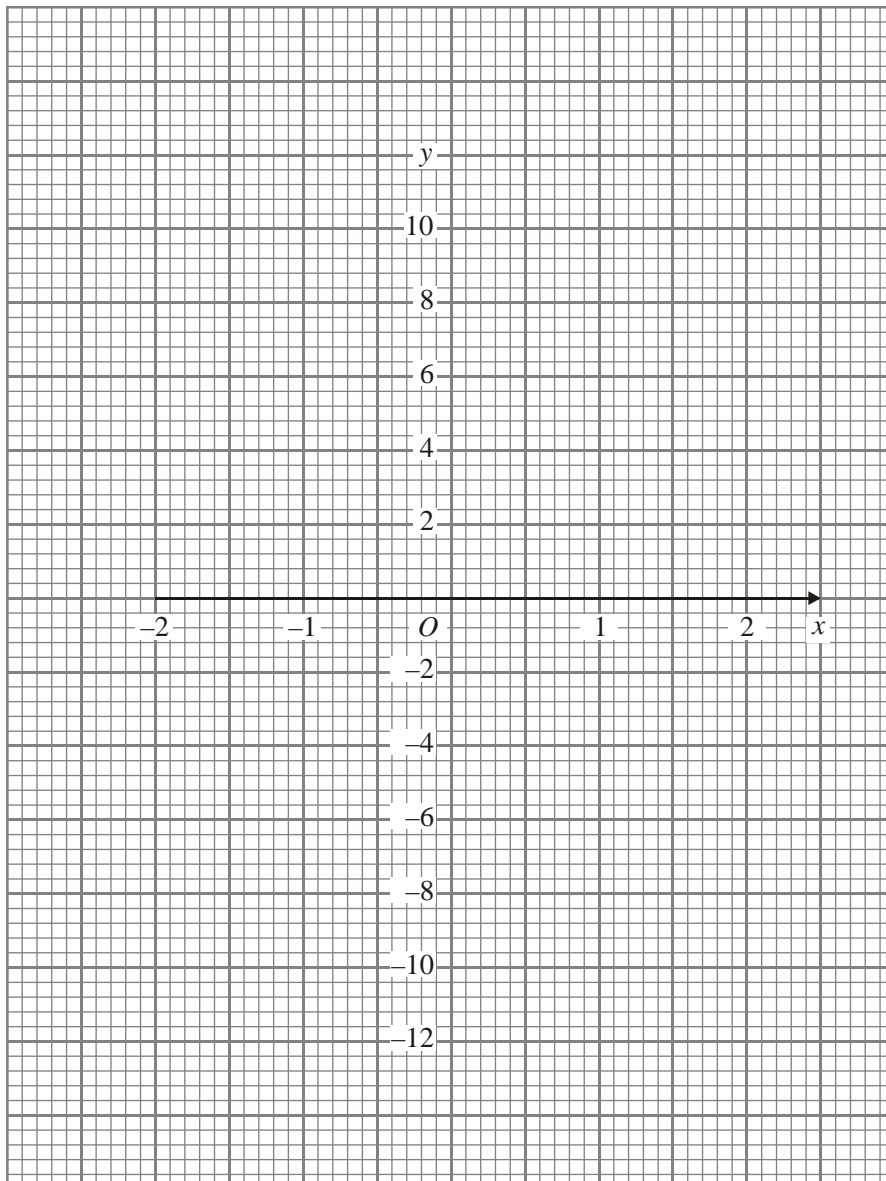| x	-2	-1	0	1	2
y	-12			0	

   (3)

   (b)   On the grid, draw the graph of $y = x^3 + x - 2$
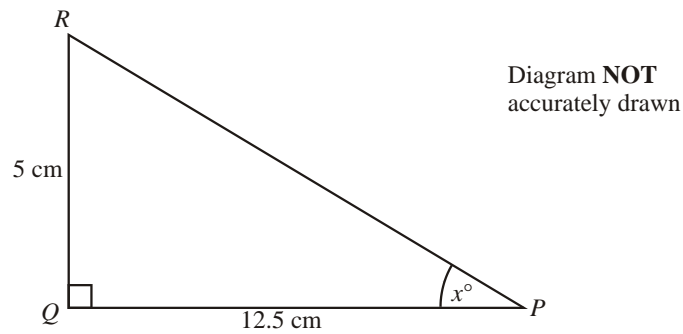
   (2)
   (Total 5 marks)

3.   Use your calculator to work out the value of $\dfrac{6.27 \times 4.52}{4.81 + 9.63}$

(a)   Write down all the figures on your calculator display.

....

(Total 2 marks)

4.

Diagram **NOT** accurately drawn

PQR is a triangle.   Angle *PQR* = 90°.   *PQ* = 12.5 cm.   *QR* = 5 cm.

Calculate the value of *x* correct to 1 decimal place.

....

(Total 3 marks)

5. (a)   Solve $6x + 2 = 4(x - 7)$

x = ……………………..

(2)

(b)   Solve $\dfrac{15 - 2x}{3} = 4$

x = ……………………..

(3)

(c)   (i)   Factorise $x^2 - 23x + 42$

$(x \qquad)(x \qquad)$

(ii)   Hence solve $x^2 - 23x + 42 = 0$

……………………………

(3)

(d)   Factorise $(x + y)^2 - 3(x + y)$

..………………………..

(1) (Total 9 marks)

6. Simplify fully

(i) $m^4 \times m^5$

……………………………..

(ii) $p^6 \div p^2$

………………………………

(iii) $5x^3y \times 2xy^8$

………………………………

(iv) $\dfrac{4(k+8)^2}{k+8}$

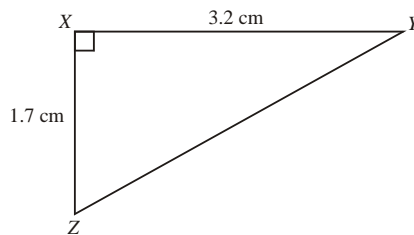……………………………..

(Total 5 marks)
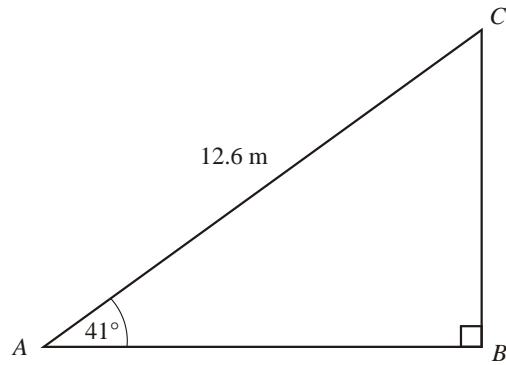
7.

Diagram **NOT** accurately drawn

XYZ is a right-angled triangle $XY = 3.2$ cm $XZ = 1.7$ cm.

Calculate the length of *YZ* correct to 3 significant figures.

…………………………. cm

(Total 3 marks)

8.

In the right-angled triangle *ABC*   *AC* = 12.6 m   Angle *CAB* = 41°   Angle *ABC* = 90°

Find the length of the side *AB* correct to 3 significant figures.

……………… m

(Total 3 marks)

9.   Solve the simultaneous equations

$$2x + 3y = 6$$
$$3x - 2y = 22$$

$x =$ ……………………

$y =$ ……………………

(Total 4 marks)