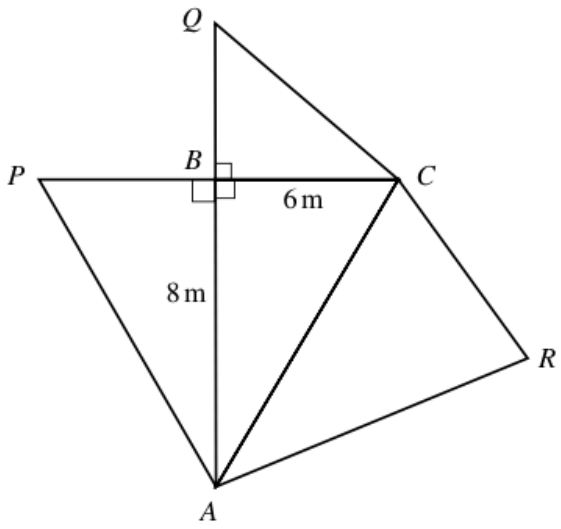
DULWICH COLLEGE | SINGAPORE |

Year 9 Examination
Mathematics (Paper 3 - Core)
May 2017

Name:……
Time allowed: 1 hour 30 minutes. Calculators allowed.

Marks		**Teacher comment:**
	%	
Level/Grade		

Student reflection



In the diagram $AB = 8$ m, $BC = 6$ m and angle $ABC = 90°$.

(a) **Calculate** the length of AC.

Answer (a) $AC =$ ..... m [2]

(b) **Calculate** the size of angle BAC.

Answer (b) Angle $BAC =$ ..... [2]

2

(a) Simplify $7k - 3m - k - 2m$.

Answer (a) ..... [2]

(b) Solve the equation $2(x - 4) + 3(5 - 3x) = 4$.

Answer (b) $x =$ ..... [3]

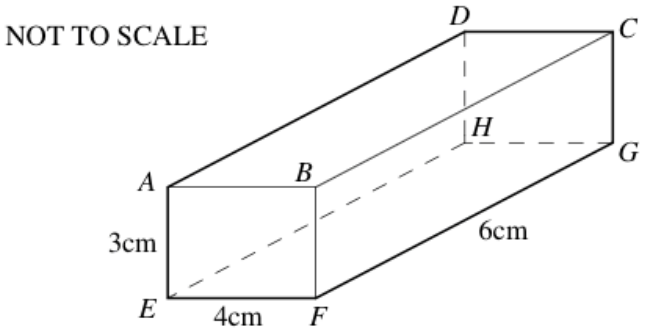
(c) Pencils cost p cents each and erasers cost e cents each.
Farah buys 7 pencils and 3 erasers.

(i) Write down the total cost in cents, in terms of p and e.

Answer (c)(i) ..... cents [2]

3

The cuboid shown in the diagram has $EF = 4$ cm, $FG = 6$ cm and $AE = 3$ cm.



(a) Calculate

(i) the volume of the cuboid,

Answer (a)(i) ..... cm^3 [2]

(ii) the surface area of the cuboid.

Answer (a)(ii) ..... cm^2 [3]

4

Bottles of water cost 25 cents each.

(i) Find the cost of 7 bottles in cents.

Answer(a)(i).....cents [1]

(ii) Write down an expression in b for the cost of b bottles in cents.

Answer(a)(ii).....cents [1]

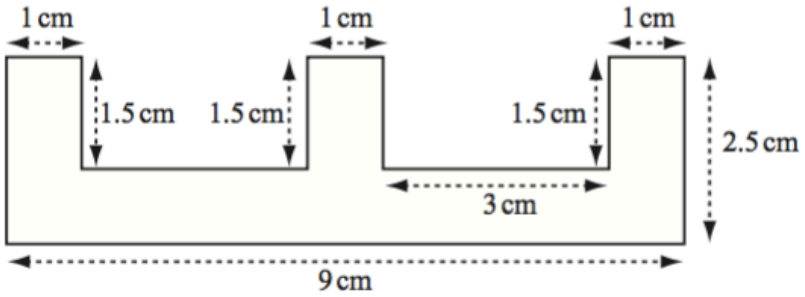
(iii) Change your answer to **part (i)** into dollars.

Answer(a)(iii) $..... [1]

(iv) Write down an expression in b for the cost of b bottles in dollars.

Answer(a)(iv) $..... [1]

5



In the diagram above, all the angles are right angles.

(a) Show that the area of the shape is $13.5\,cm^2$.

Answer(a)

[2]

(b) The shape is the cross-section of a metal prism of length 2.8 **metres.**
Calculate the volume of the prism in cubic centimetres.

Answer(b).....cm^3 [3]

6

20 21 22 23 24 25 26 27 28 29 30

From the set of numbers above, write down

(a) a multiple of 8,

Answer (*a*)..... [1]

(b) a square,

Answer (*b*)..... [1]

(c) a cube,

Answer (*c*)..... [1]

(d) two prime numbers,

Answer (*d*) ..... [2]

(e) a factor of 156,

Answer (*e*)..... [1]

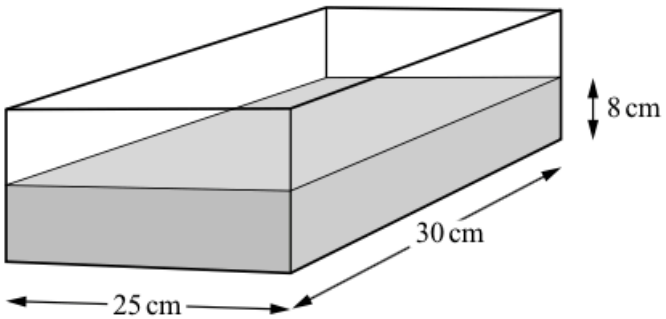
(f) the square root of 784,

Answer (*f*) .....[1]

(g) two numbers whose product is 567.

Answer (*g*) .....[1]

7



NOT TO SCALE

The diagram shows a rectangular tank of base 30 cm by 25 cm. It contains water to a depth of 8 cm.

(a) Calculate the volume of water in the tank.

Answer (*a*) .....cm^3 [2]

8

(a) The perimeter, P, of a triangle is given by the formula

$$P = 6x + 3.$$

(i) Find the value of P when $x = 4$.

Answer (*a*)(i) $P =$ ..... [1]

(ii) Find the value of x when $P = 39$.

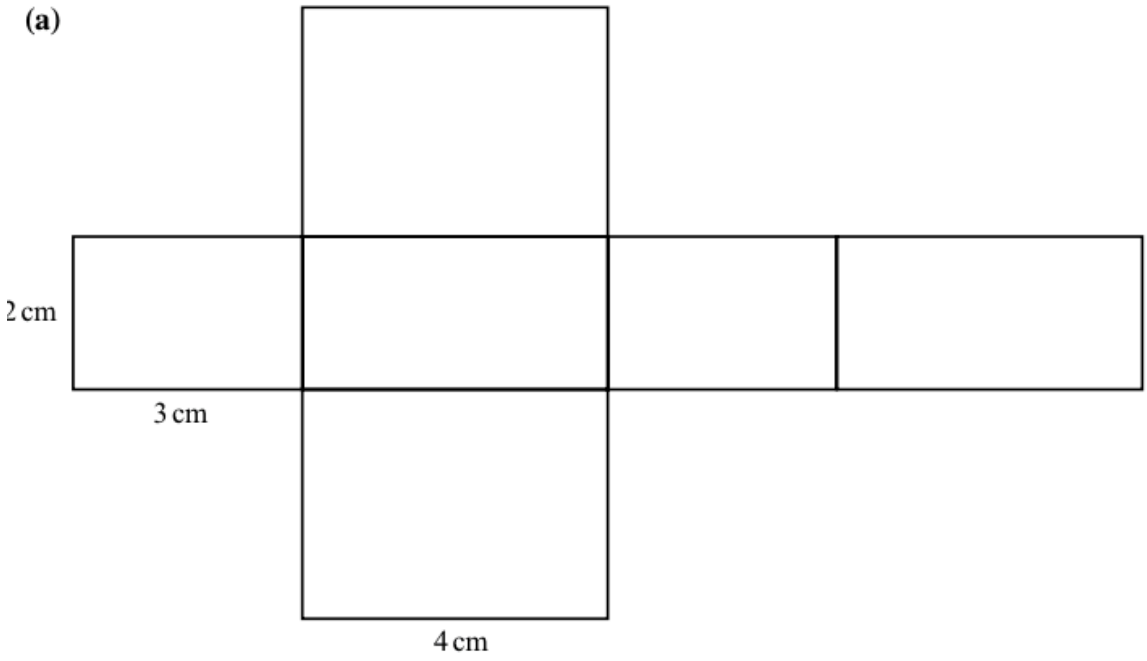
Answer (*a*)(ii) $x =$ ..... [2]

(iii) Rearrange the formula to find x in terms of P.

Answer (*a*)(iii) $x =$ ..... [2]

9

(a)



The diagram shows the net of a solid.

(i) Work out the perimeter of the net.

Answer (*a*)(i) ..... cm [2]

(ii) Work out the area of the net.

Answer (*a*)(ii) .....cm^2 [3]

(iii) Write down the mathematical name of the solid.

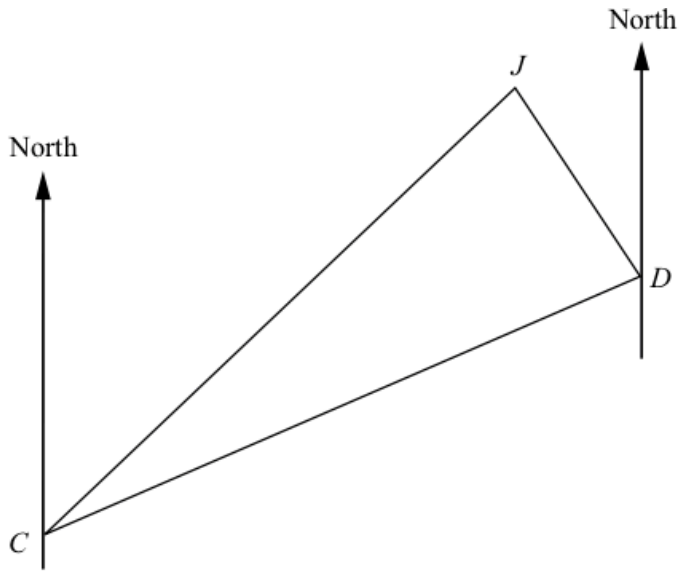
Answer (*a*)(iii)..... [1]

(iv) Write down the surface area of the solid.

Answer (*a*)(iv) .....cm^2 [1]

(v) Work out the volume of the solid.

Answer (*a*)(v) .....cm^3 [2]



The diagram, drawn to scale, shows the positions of Johannesburg (J), Cape Town (C) and Durban (D).

(a) The distance from Johannesburg to Durban is 450 kilometres.
On the diagram $JD = 3$ cm.

(i) How many kilometres are represented by 1 cm on the diagram?

Answer (*a*)(i)..... [1]

(ii) Work out the scale of the diagram as a ratio.

Answer (*a*)(ii) 1 : ..... [2]

(b) Use the diagram to find

(i) the distance from Cape Town to Johannesburg,

Answer (*b*)(i)..... km [2]

11

Find the values of m and n by solving the simultaneous equations

$$2m + 17n = 120,$$

$$m + n = 15.$$ [3]

12

Write the four values in order, smallest first.

$\frac{1}{1000}$, $\frac{11}{1000}$, 0.11%, 0.0108.

Answer …….. < …….. < …….. < …….. [2]

13 Work out $48k^{10} \div 24k^{8}$ giving your answer in its simplest form.

Answer ..... [2]