Baseline Assessment – Year 10 (Monday Group)

1. Simplify,

$$7\sqrt{28}-3\sqrt{63}+\sqrt{7}$$

……

2. Expand the brackets and simplify,

(i) $(4+\sqrt{2})(3+\sqrt{2})$

……...

(ii) $(3-4\sqrt{3})(2+3\sqrt{3})$

……

3. Rationalise the denominator.

(i) $\frac{2}{\sqrt{7}}$

……

(ii) $\frac{5}{3-\sqrt{2}}$

……

4. Simplify,

(i) 4^{-3}

……

(ii) $25^{\frac{3}{2}}$

……

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5. Factorise,

(i) $2x^2 + 3x - 9$

……

(ii) $9x^2 - 25$

……

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6. Simplify,

(i) $\dfrac{x^2 - 6x + 8}{x^2 - 7x + 10}$

……

(ii) $\dfrac{4}{x} + \dfrac{3}{2-x}$

.....

7.

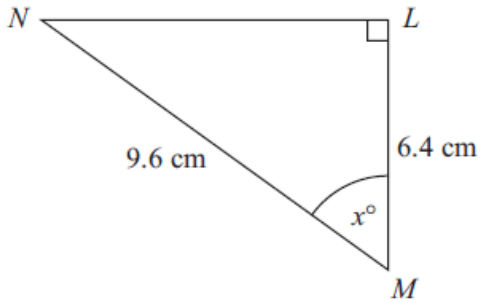


Diagram **NOT** accurately drawn

LMN is a right-angled triangle.
MN = 9.6 cm.
LM = 6.4 cm.

Calculate the size of the angle marked $x°$.
Give your answer correct to 1 decimal place.

.....°

8.

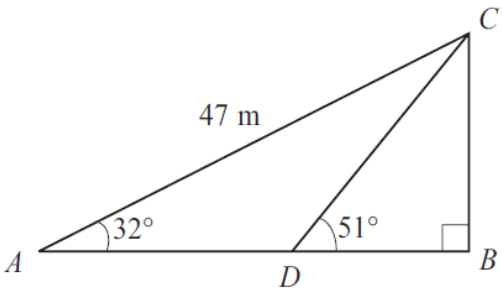


Diagram **NOT** accurately drawn

Triangle ABC is right-angled at B.
Angle $BAC = 32°$
$AC = 47$ m.
D is the point on AB such that angle $BDC = 51°$

Calculate the length of BD.
Give your answer correct to 3 significant figures.

..... m

9. There are 4 green marbles, 2 red marbles and 3 blue marbles in a box.

   Jay picks 2 marbles at random from the box without replacement.

   Find the probability that the two marbles he picked are of different colours.

   (Hint: You may use a tree diagram to solve this problem.)

……

10.

A, B, C and D are points on a circle.
Angle $BAC = 40°$.
Angle $DBC = 55°$.

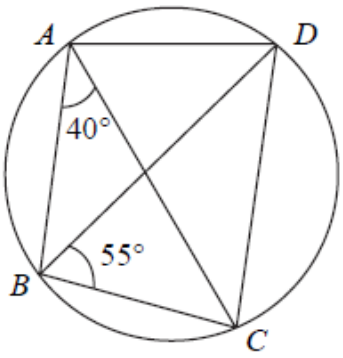


Diagram **NOT** accurately drawn

(a) (i) Find the size of angle DAC.

..... °

(ii) Give a reason for your answer.

.....

.....

(2)

(b) (i) Calculate the size of angle DCB.

..... °

(ii) Give reasons for your answer.

.....

.....

.....

.....

(3)

(c) Is BD a diameter of the circle? .....

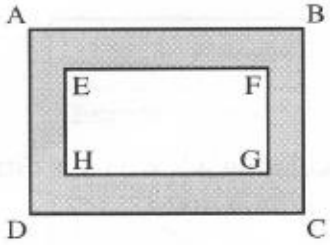
Give a reason for your answer.

.....

(1)

11.

In the diagram, ABCD and EFGH are rectangles with AB = 10 cm, BC = 7 cm, EF = 7 cm and FG = 4 cm, all figures accurate to the nearest cm.
Find the largest possible value of the shaded area.



(Hint: Think about upper bounds and lower bounds.)

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12.

q is inversely proportional to the square of t.

When $t = 4$, $q = 8.5$

(a) Find a formula for q in terms of t.

q = ...

(3)

(b) Calculate the value of q when $t = 5$

.....

(1)