

Intermediate 2 - Unit 2 - Practice NAB 3

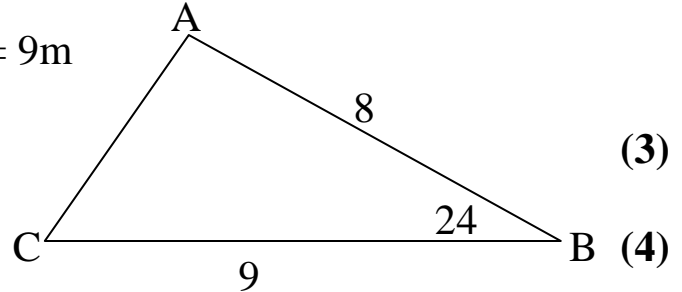
Outcome 1

1. An advertising sign is in the shape of a triangle as shown.

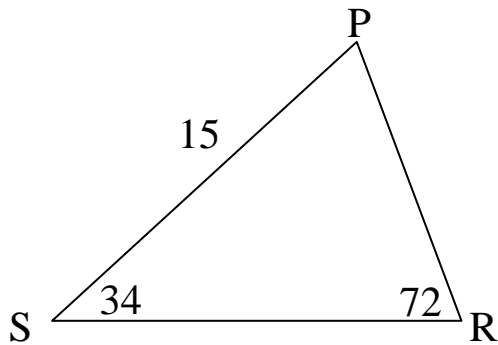
Angle ABC = 24° , AB = 8m and BC = 9m

- a) Calculate the area of the sign

- b) Calculate the length of AC



- 2.



The course for a race is shown.

Angles PRS = 72° , PSR = 34° & SP = 15m

Calculate the size of PR

Outcome 2

3. a) On the same diagram, draw the lines: $x - 2y = 0$ and $x - y = 1$ (2)

- b) Use the graph to solve the system of equations: $x - 2y = 0$
 $x - y = 1$ (1)

4. Solve, algebraically, the system of equations: $5x + 2y = 10$
(Do NOT draw the graphs!!!) $2x + 2y = 4$ (3)

Outcome 3

5. A survey on the number of pupils in each subject class in third year is shown below:

15 24 21 28 14 22 24 18

- a) Find the maximum, minimum, median and quartiles of this data. (4)

- b) Draw a boxplot to illustrate the data. (2)

6. A group of 45 members of a fitness club were asked which machine they used most. The table below shows the results:

<u>Machine</u>	<u>Frequency</u>	<u>Angle in pie chart</u>
Rowing	29	
Bicycle	45	
Treadmill	16	

- a) Copy and complete this table. (2)
- b) Draw a pie chart to illustrate the data. (2)

Outcome 4

7. The temperature in 8 places in Glasgow on March 15th are shown below:

17 19 12 16 15 13 18 15

Find the mean and the standard deviation of this random sample, showing all necessary working. (4)

8. A restaurant finds that the cost of running his restaurant depends on the number of meals served.

<u>Number of meals</u>	<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>
Cost in £	300	316	344	400	380

- a) Plot the points and draw the best fitting straight line through them. (1)
- b) Find the equation of the line. (3)
- c) Use your equation to estimate the cost when 25 meals are served. (2)
9. A game of bingo is played using balls numbered 1 to 99. What is the probability that a ball chosen at random is greater than or equal to 81? (2)

Intermediate 2 - Unit 2 - Practice NAB 3 Solutions

Outcome 1 - You need 7 out of 10 to pass

1. a) $A = \frac{1}{2}absinC$
 $= \frac{1}{2} \times 8 \times 9 \times \sin 24$
 $= 14.64 \text{ m}^2$

(b) $a^2 = b^2 + c^2 - 2bccosA$
 $a^2 = 8^2 + 9^2 - 2 \times 8 \times 9 \times \cos 24$
 $a^2 = 145 - 131.55$
 $a^2 = 13.45$
 $a = \sqrt{13.45}$
 $a = 3.67\text{m}$

2. $\frac{p}{\sin P} = \frac{r}{\sin R} = \frac{s}{\sin S}$
 $\frac{15}{\sin 72} = \frac{PR}{\sin 34}$
 $PR = \frac{15 \times \sin 34}{\sin 72}$
 $PR = 8.82$

Outcome 2 - You need 4 out of 6 to pass

3. a) Draw the two lines on the same diagram.

b) (2, 1).

4. $5x + 2y = 10 \rightarrow a$
 $2x + 2y = 4 \rightarrow b$
a - b $3x = 6$
 $x = 2$

sub $x = 2$ into $2x + 2y = 4$
 $2(2) + 2y = 4$
 $4 + 2y = 4$
 $2y = 0$
 $y = 0$

Outcome 3 - You need 7 out of 10 to pass

5. a) 14 15 18 21 22 24 24 28
L – 14 Q1 – 16.5 Q2 – 21.5 Q3 – 24 H – 28
- b) Boxplot drawn.
6. a) Angles: 116, 180, 64
- b) Piechart drawn and labeled.

Outcome 4 - You need 8 out of 12 to pass

7. mean = $\frac{125}{8}$ Use table to get $\Sigma(x - \bar{x})^2 = 39.86$
= 15.63
- $$S = \sqrt{\frac{39.86}{7}} = \sqrt{5.69} = 2.39$$
8. a) Points plotted with meals along the bottom and cost up the side.
The line of best fit drawn.
- b) You could choose (10 , 300) & (30, 344) and find the gradient: $m = 2.2$
Read $y -$ intercept from graph, should be between 270 and 280
Equation is $C = 2.2x + 275$, your answer may be slightly different!
- c) Cost = $2.2 \times 25 + 275$
= $55 + 275$
= £330 your answer may be slightly different!
9. $P(\geq 81) = \frac{18}{99}$
= $\frac{2}{11}$