

# Intermediate 2 - Unit 2 - Practice NAB 1

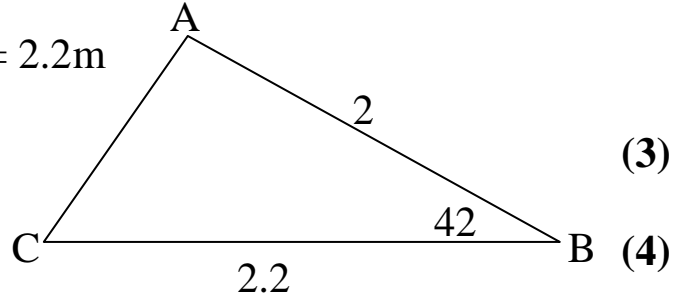
## Outcome 1

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

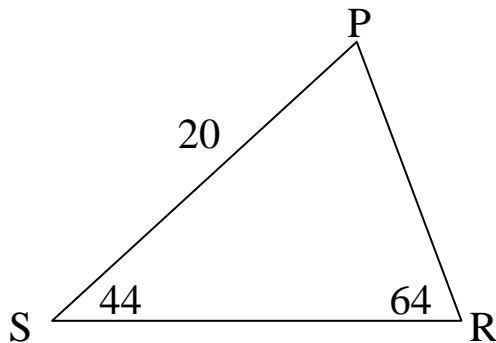
Angle ABC = 42, AB = 2m and BC = 2.2m

- a) Calculate the area of the sign

- b) Calculate the length of AC



- 2.



The course for a race is shown.

Angles PSR = 44, PRS = 64 & SP = 20m

Calculate the size of PR. (3)

## Outcome 2

3. a) On the same diagram, draw the lines:  $2x - y = 8$  and  $x + y = 4$  (2)

- b) Use the graph to solve the system of equations:  $2x - y = 8$   
 $x + y = 4$  (1)

4. Solve, algebraically, the system of equations:  $3x - 4y = 5$   
(Do NOT draw the graphs!!!)  $2x + 2y = 8$  (3)

## Outcome 3

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

30   24   12   26   28   15   19   22   26   14

- 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 60 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	19	
Bicycle	15	
Treadmill	26	

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

#### Outcome 4

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

13 11 16 15 12 13 14 12 16 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 £	180	188	202	230	220

- 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 90? (2)

# Intermediate 2 - Unit 2 - Practice NAB 1 Solutions

## Outcome 1 - You need 7 out of 10 to pass

1. a)  $A = \frac{1}{2}ab\sin C$   
 $= \frac{1}{2} \times 2 \times 2.2 \times \sin 42$   
 $= 1.47\text{m}^2$

(b)  $a^2 = b^2 + c^2 - 2bc\cos A$   
 $a^2 = 2^2 + 2.2^2 - 2 \times 2 \times 2.2 \times \cos 42$   
 $a^2 = 8.84 - 6.54$   
 $a^2 = 2.3$   
 $a = \sqrt{2.3}$   
 $a = 1.52\text{m}$

2.  $\frac{p}{\sin P} = \frac{r}{\sin R} = \frac{s}{\sin S}$   
 $\frac{20}{\sin 64} = \frac{PR}{\sin 44}$   
 $PR = \frac{20 \times \sin 44}{\sin 64}$   
 $PR = 15.46$

## Outcome 2 - You need 4 out of 6 to pass

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

b) (4, 0).

4.  $3x - 4y = 5 \rightarrow a$   
 $2x + 2y = 8 \rightarrow b$   
 $3x - 4y = 5 \rightarrow a$   
 $b \times 2 \quad 4x + 4y = 16 \rightarrow c$   
 $a + c \quad 7x = 21$   
 $x = 3$

sub  $x = 3$  into  $2x + 2y = 8$   
 $2(3) + 2y = 8$   
 $6 + 2y = 8$   
 $2y = 2$   
 $y = 1$

### Outcome 3 - You need 7 out of 10 to pass

5. a) 12 14 15 19 22 24 26 26 28 30  
L – 12 Q1 - 15 Q2 - 23 Q3 - 26 H - 30
- b) Boxplot drawn.
6. a) Angles: 114, 90, 156
- b) Piechart drawn and labeled.

### Outcome 4 - You need 8 out of 12 to pass

7. mean =  $\frac{137}{10}$  Use table to get  $\Sigma(x - \bar{x})^2 = 28.1$   
= 13.7
- $$S = \sqrt{\frac{28.1}{9}} = \sqrt{3.122...} = 1.77$$
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 , 180) & (30, 202) and find the gradient:  $m = 1.1$   
Read y – intercept from graph, should be between 165 and 170  
Equation is  $C = 1.1x + 167$ , your answer may be slightly different!
- c) Cost =  $1.1 \times 25 + 167$   
=  $27.5 + 167$   
= £194.50 your answer may be slightly different!
9.  $P(>90) = \frac{9}{99}$   
=  $\frac{1}{11}$