

## Intermediate 2 - Unit 2 - Practice NAB 2

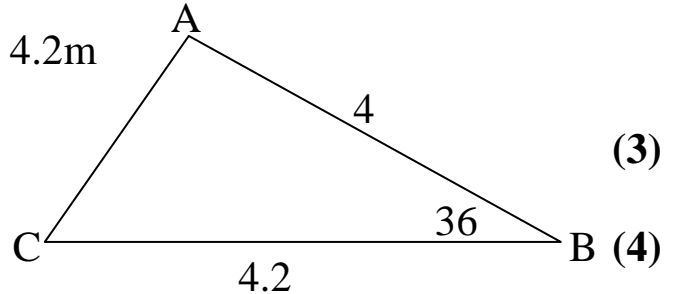
### Outcome 1

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

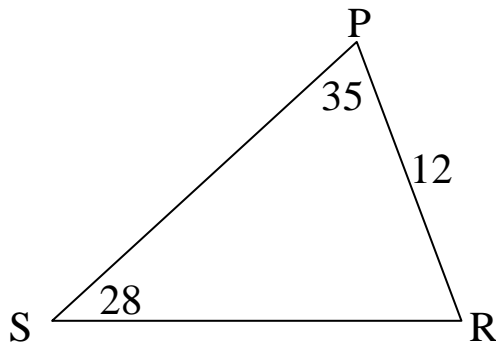
Angle  $ABC = 36$ ,  $AB = 4\text{m}$  and  $BC = 4.2\text{m}$

- a) Calculate the area of the sign

- b) Calculate the length of  $AC$



- 2.



The course for a race is shown.

Angles  $SPR = 35$ ,  $PSR = 28$  &  $PR = 12$

Calculate the length of  $RS$  (3)

### Outcome 2

3. a) On the same diagram, draw the lines:  $x + 2y = 8$  and  $x - y = -1$  (2)

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

4. Solve, algebraically, the system of equations:  $5x - 2y = 21$   
(Do NOT draw the graphs!!!)  $2x - 3y = 4$  (3)

### Outcome 3

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

18   16   24   26   28   14   21   22   28   16

- 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	9	
Bicycle	25	
Treadmill	11	

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

#### Outcome 4

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

7    9    12    6    5    13    8

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 £	150	158	172	200	190

- 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 less than 20? (2)

## Intermediate 2 - Unit 2 - Practice NAB 2 Solutions

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

1. a)  $A = \frac{1}{2}absinC$   
 $= \frac{1}{2} \times 4 \times 4.2 \times \sin 36$   
 $= 4.94 \text{ m}^2$

(b)  $a^2 = b^2 + c^2 - 2bccosA$   
 $a^2 = 4^2 + 4.2^2 - 2 \times 4 \times 4.2 \times \cos 36$   
 $a^2 = 33.64 - 27.18$   
 $a^2 = 6.46$   
 $a = \sqrt{6.46}$   
 $a = 2.54\text{m}$

2.  $\frac{p}{\sin P} = \frac{r}{\sin R} = \frac{s}{\sin S}$   
 $\frac{12}{\sin 28} = \frac{SR}{\sin 35}$   
 $SR = \frac{12 \times \sin 35}{\sin 28}$   
 $SR = 14.66$

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

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

b) (2, 3).

4.  $5x - 2y = 21 \rightarrow a$   
 $2x - 3y = 4 \rightarrow b$   
 $a \times 3 \quad 15x - 6y = 63 \rightarrow c$   
 $b \times 2 \quad 4x - 6y = 8 \rightarrow d$   
 $a - d \quad 11x = 55$   
 $x = 5$

sub  $x = 5$  into  $2x - 3y = 4$   
 $2(5) - 3y = 4$   
 $10 - 3y = 4$   
 $-3y = -6$   
 $y = 2$

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

5. a) 14 16 16 18 21 22 24 26 28 28  
L - 14 Q1 - 16 Q2 - 21.5 Q3 - 26 H - 28

b) Boxplot drawn.

6. a) Angles: 72, 200, 88

b) Piechart drawn and labeled.

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

7. mean =  $\frac{60}{7}$  Use table to get  $\Sigma(x - \bar{x})^2 = 53.71$   
= 8.57

$$S = \sqrt{\frac{53.71}{6}} = \sqrt{8.952...} = 2.99$$

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, 150) & (30, 172) and find the gradient:  $m = 1.1$   
Read  $y$  - intercept from graph, should be between 135 and 140  
Equation is  $C = 1.1x + 137$ , your answer may be slightly different!

c) Cost =  $1.1 \times 25 + 137$   
=  $27.5 + 137$   
= £164.50 your answer may be slightly different!

9.  $P(<20) = \frac{19}{99}$