The City School

2nd Term

1st Formal Assessment

Mathematics

Time: 50 minutes | Maximum Marks 25

Name of Student: _____ | Class/Sec: XI ____

Date:

Q1. **(a)** A shopkeeper buys some plates from a manufacturer for $10 each.

(i) **(a)** The shopkeeper sells a plate for $12.

Calculate the percentage profit.

Answer .....% [1]

(b) The shopkeeper buys 240 plates and sells 180 at $12 each.
The rest were sold to a café for a total of $540.

Calculate the percentage discount given to the café.

Answer .....% [2]

ii) The manufacturer made a profit of 60% when he sold each plate for $10.

Calculate the cost of manufacturing each plate.

Answer $..... [2]

(b) Another shopkeeper bought 100 pans at \$5 each.
He sold 63 at \$6 each and x at \$4 each.
He did not sell all the pans nor enough to make an overall profit.

(i) Form an inequality in x.

Answer ..... [1]

(ii) Hence find the greatest possible number of pans that were sold.

Answer ..... [2]

(c) One day, the rate of exchange between American dollars (\$) and British pounds (£) was \$1.45 = £1.

(i) Alan changed £300 into dollars.

Calculate how many dollars he received.

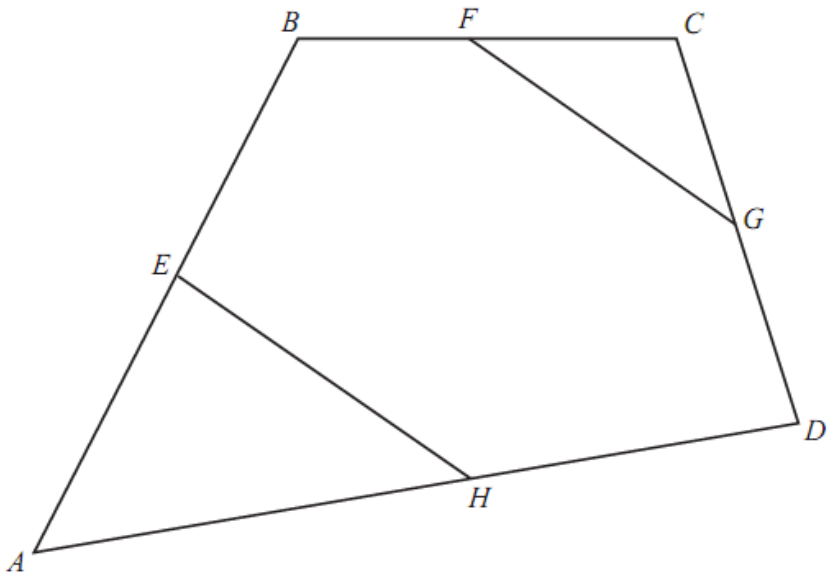
Answer \$..... [1]

(ii) On the same day, the rate of exchange between South African rands (R) and pounds was R10.44 = £1.

Calculate the number of rands received in exchange for one dollar.

Answer R..... [2]

Q2. **(a)**



(i) $\overrightarrow{AD} = \begin{pmatrix} 6 \\ 1 \end{pmatrix}$

Calculate $|\overrightarrow{AD}|$.

Answer ..... [1]

(ii) $\overrightarrow{AE} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$

H is the midpoint of AD.

Find $\overrightarrow{EH}$.

Answer $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

(iii) $\overrightarrow{BF} = \begin{pmatrix} 1.5 \\ 0 \end{pmatrix}$ $\overrightarrow{CG} = \begin{pmatrix} 0.5 \\ -1.5 \end{pmatrix}$

F is the midpoint of BC.

Find $\overrightarrow{FG}$.

Answer $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(iv) Use your answers to **parts (ii)** and **(iii)** to complete the following statement.

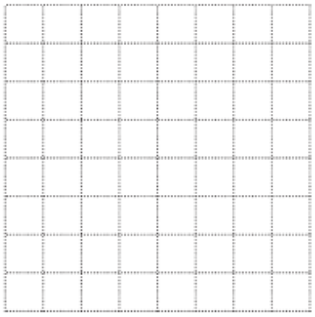
The lines *EH* and *FG* are ..... and ..... [1]

Q3. **(a)** $\mathbf{p} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} -2 \\ 0 \end{pmatrix}$

(i) Find $|\mathbf{p}|$.

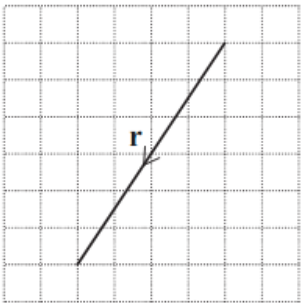
Answer ..... [1]

(ii) On the unit grid below, draw and label the vector $\mathbf{p} - \mathbf{q}$.



[2]

(iii) The vector **r** is shown on the unit grid below.



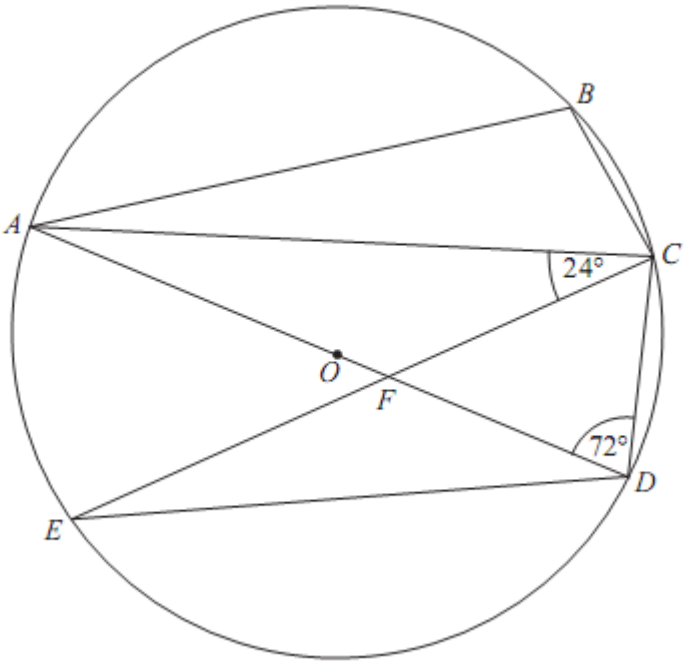
It is given that $\mathbf{r} = a\mathbf{p} + b\mathbf{q}$.

Find the values of a and b.

Answer $a =$ .....

$b =$ ..... [2]

Q4.



A, B, C, D and E are points on a circle with centre O.
AD is a diameter of the circle and F is the point of intersection of AD and CE.
$A\hat{C}E = 24°$ and $A\hat{D}C = 72°$.

(a) Find

(i) $A\hat{D}E$,

Answer ..... [1]

(ii) $C\hat{E}D$,

Answer ..... [1]

(iii) $C\hat{F}D$,

Answer ..... [1]

(iv) $A\hat{B}C$.

Answer ..... [1]