1. Consider the statement p:

"If a quadrilateral is a square then the four sides of the quadrilateral are equal".

(a) Write down the inverse of statement p in words.

(2)

(b) Write down the converse of statement p in words.

(2)

(c) Determine whether the converse of statement p is always true. Give an example to justify your answer.

(2)

(Total 6 marks)

2. Consider the following logic statements:

p: x is a factor of 6

q: x is a factor of 24

(a) Write $p \Rightarrow q$ in words.

(1)

(b) Write the converse of $p \Rightarrow q$.

(1)

(c) State if the converse is true or false and give an example to justify your answer.

(2)

(Total 4 marks)

3. (a) Solve $2x + 3 = 5$.

(b) Consider the logic statements.

p: $2x + 3 = 5$ q: $x^2 = x$

The compound proposition $2x + 3 = 5 \Rightarrow x^2 = x$ is given.
Is this compound proposition true?

(c) Write down the converse of this compound proposition.

(d) Give an example to show that the converse is false.

(Total 8 marks)

4. Consider the statement *"If a figure is a square, then it is a rhombus"*.

(a) For this statement, write in words

(i) its converse;

(ii) its inverse;

(iii) its contrapositive.

(b) Only one of the statements in part(a) is true. Which one is it?

(Total 8 marks)

5. Two propositions p and q are defined as follows:

p: the number ends in zero

q: *the number is divisible by 5*

(a) Write in words

(i) $p \Rightarrow q$;

(ii) the converse of $(p \Rightarrow q)$.

(b) Write in symbolic form

(i) the inverse of $(p \Rightarrow q)$;

(ii) the contrapositive of $(p \Rightarrow q)$.

(Total 4 marks)