MATHEMATICAL SKILLS

AREA OF A SQUARE
AND
ASSOCIATED EXAMINATION QUESTIONS

DESIGN AND TECHNOLOGY

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ETC...
**Definition:** A square has four sides, with each being equal in length. Each of the four internal angles are right angles, 90 degrees.

**FORMULA**

\[
\text{AREA} = X^2 \\
\text{OR } X = X \times X
\]

*X IS THE LENGTH OF ONE SIDE*

*REMEMBER, WITH A SQUARE, EACH SIDE IS THE SAME LENGTH*

**SAMPLE QUESTIONS**

1. Calculate the area of the square shown opposite. The length of one side is 100mm

   \[
   \text{AREA} = X^2 \\
   \text{AREA} = 100\text{mm} \times 100\text{mm} \\
   \text{AREA} = 10000\text{mm}^2
   \]

2. Calculate the area of the square shown opposite. The length of one side is 50mm

   \[
   \text{AREA} = X^2 \\
   \text{AREA} = 50\text{mm} \times 50\text{mm} \\
   \text{AREA} = 2500\text{mm}^2
   \]
Calculate the area of the square shown opposite. The length of one side is 90mm

\[ \text{AREA} = X^2 \]
\[ \text{AREA} = 90mm \times 90mm \]
\[ \text{AREA} = 8100mm^2 \]

Calculate the area of the square shown opposite. The length of one side is 70mm

\[ \text{AREA} = X^2 \]
\[ \text{AREA} = 70mm \times 70mm \]
\[ \text{AREA} = 4900mm^2 \]

Calculate the area of the square shown opposite. The length of one side is 80mm

\[ \text{AREA} = X^2 \]
\[ \text{AREA} = 80mm \times 80mm \]
\[ \text{AREA} = 6400mm^2 \]

Calculate the area of the square shown opposite. The length of one side is 60mm

\[ \text{AREA} = X^2 \]
\[ \text{AREA} = 60mm \times 60mm \]
\[ \text{AREA} = 3600mm^2 \]
CALCULATING THE AREA OF A SQUARE

**Definition:** A square has four sides, with each being equal in length. Each of the four internal angles are right angles, 90 degrees.

**FORMULA**

\[
\text{AREA} = X^2 \\
\text{OR } X = X \text{ multiplied by } X
\]

**X IS THE LENGTH OF ONE SIDE**

**REMEMBER, WITH A SQUARE, EACH SIDE IS THE SAME LENGTH**

**SAMPLE QUESTIONS**

Calculate the area of the square shown opposite. The length of one side is 100mm

**Calculate the area of the square shown opposite. The length of one side is 50mm**
SAMPLE QUESTIONS

Calculate the area of the square shown opposite.
The length of one side is 90mm

Calculate the area of the square shown opposite.
The length of one side is 70mm

Calculate the area of the square shown opposite.
The length of one side is 80mm

Calculate the area of the square shown opposite.
The length of one side is 60mm
A plywood panel for a cabinet is seen below.

1. Calculate the area of the plywood required, before it is cut to shape (the overall square of plywood required, before it is cut to an L shape).

2. Calculate the area of the final L shape.

First, calculate the area of the uncut plywood, by treating it as a square 500mm x 500mm.

\[ \text{AREA} = \text{LENGTH OF SIDE} \times \text{LENGTH OF SIDE} \]
\[ \text{AREA} = 500 \times 500 \]
\[ \text{AREA} = 250000\text{mm}^2 \]

Now, calculate the area of the smaller piece to be cut away, during the shaping of the panel.

\[ \text{AREA} = \text{LENGTH OF SIDE} \times \text{LENGTH OF SIDE} \]
\[ \text{AREA} = 250 \times 250 \]
\[ \text{AREA} = 62500\text{mm}^2 \]

Now subtract the smaller area from the area of the uncut plywood.

250000 - 62500 = 187500

\[ \text{AREA OF FINAL SHAPED PIECE IS} \ 187500\text{mm}^2 \]
A plywood panel for a cabinet is seen below.

1. Calculate the area of the plywood required, before it is cut to shape (the overall square of plywood required, before it is cut to an L shape).

2. Calculate the area of the final L shape.
1. Calculate the area of piece A

2. Calculate the area of piece B

First, calculate the entire area of 'A', without the centre piece being removed, by treating it as a square 400mm x 400mm.

\[ \text{AREA} = \text{LENGTH OF SIDE} \times \text{LENGTH OF SIDE} \]
\[ \text{AREA} = 400 \times 400 \]
\[ \text{AREA} = 160000 \text{mm}^2 \]

Now, calculate the area of the smaller piece ‘B’, which is also the size of the piece to be removed from ‘A’.

\[ \text{AREA} = \text{LENGTH OF SIDE} \times \text{LENGTH OF SIDE} \]
\[ \text{AREA} = 200 \times 200 \]
\[ \text{AREA} = 40000 \text{mm}^2 \]

Now subtract the smaller area ‘B’ from the area of ‘A’. The answer will be the area of ‘A’ with it’s central window of material removed.

\[ 160000 - 40000 = 120000 \text{mm}^2 \]

AREA OF FINAL SHAPED PIECE ‘A’ WITHOUT CENTRAL PIECE IS 120000mm²
AREA OF PIECE ‘B’ IS 40000mm²
1. Calculate the area of piece A

2. Calculate the area of piece B