



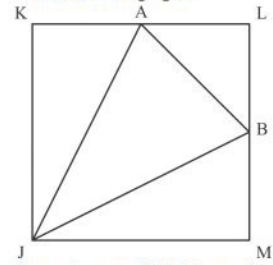
#### Probability Ex 13.2 Q4

**Answer :**

**Given:** JKLM is a square with sides of length 6 units. Points A and B are the midpoints of sides KL and ML respectively. If a point is selected at random from the interior of the square

**To find:** Probability that the point will be chosen from the interior of  $\triangle JAB$ .

We have the following figure



Area of square JKLM is equal to

$$= 6^2$$

$$= 36 \text{ sq units}$$

Now we have

$$\begin{aligned} \text{ar}(\triangle KAJ) &= \frac{1}{2} \times AK \times KJ \\ &= \frac{1}{2} \times 3 \times 6 \\ &= 9 \text{ units}^2 \end{aligned}$$

$$\begin{aligned}
 \text{ar}(\Delta JMB) &= \frac{1}{2} \times JM \times BM \\
 &= \frac{1}{2} \times 6 \times 3 \\
 &= 9 \text{ units}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{ar}(\Delta ALB) &= \frac{1}{2} \times AL \times BL \\
 &= \frac{1}{2} \times 3 \times 3 \\
 &= \frac{9}{2} \text{ units}^2
 \end{aligned}$$

Now area of the triangle AJB

$$\begin{aligned}
 \text{ar}(\Delta AJB) &= 36 - 9 - 9 - \frac{9}{2} \\
 &= \frac{27}{2} \text{ units}^2
 \end{aligned}$$

We know that Probability

$$= \frac{\text{Number of favourable event}}{\text{Total number of event}}$$

$$\begin{aligned}
 &\frac{27}{36} \\
 &= \frac{27}{2 \times 36} \\
 &= \frac{3}{8}
 \end{aligned}$$

Hence the Probability that the point will be chosen from the interior of  $\Delta AJB$  is  $\boxed{\frac{3}{8}}$

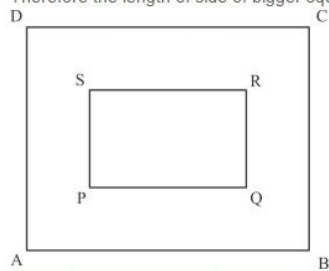
**Answer :**

**Given:** A square dart board is shown. The length of a side of the larger square is 1.5 times the length of a side of the smaller square. If a dart is thrown and lands on the larger square

**To find:** Probability that it will land in the interior of the smaller square

Let the length of smaller square is  $x$  cm

Therefore the length of side of bigger square will be  $1.5x$  cm



$$\begin{aligned}\text{Area of bigger square} &= (1.5x)^2 \\ &= 2.25x^2 \text{ cm}^2\end{aligned}$$

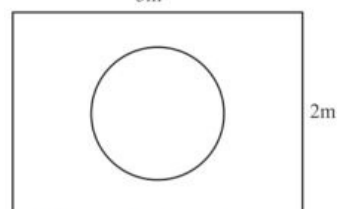
$$\text{Area of smaller square} = x^2 \text{ cm}^2$$

$$\text{We know that Probability} = \frac{\text{Number of favourable event}}{\text{Total number of event}}$$

$$\text{Hence probability that the dart will land in the interior of the smaller square is equal to} = \frac{x^2}{2.25x^2} = \boxed{\frac{4}{9}}$$

**Answer :**

**Given:** Suppose you drop a tie at random on the rectangular region shown in figure



**To find:** Probability that it will land in inside the circle of diameter 1m

Total area of circle with diameter 1 m

$$\begin{aligned}\text{Area of circle with diameter 1 m} &= \pi \left(\frac{1}{2}\right)^2 \\ &= \frac{\pi}{4} \text{ m}^2\end{aligned}$$

$$\begin{aligned}\text{Area of rectangle} &= 3 \times 2 \\ &= 6 \text{ m}^2\end{aligned}$$

$$\text{We know that PROBABILITY} = \frac{\text{Number of favourable event}}{\text{Total number of event}}$$

$$\text{Hence probability that the tie will land in the circle is} \frac{\frac{\pi}{4}}{6} = \boxed{\frac{\pi}{24}}$$

\*\*\*\*\* END \*\*\*\*\*