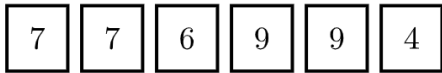


Question 1

You have six cards, numbered as shown:



You pick two of the cards at random and multiply their numbers.

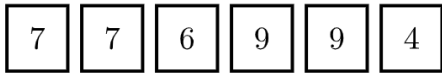
What is the probability that this product is an **odd** number?

Question 2

Find the exact coordinates of the two points of intersection of the line $y = -x$ and the circle $x^2 + y^2 = 10$.

Question 1

You have six cards, numbered as shown:



You pick two of the cards at random and multiply their numbers.

What is the probability that this product is an **odd** number?

The only way to get an odd product is to pick two odd cards.

Therefore the probability of getting an odd product is

$$\frac{4}{6} \times \frac{3}{5} = \frac{12}{30} = \frac{2}{5}$$

Question 2

Find the exact coordinates of the two points of intersection of the line $y = -x$ and the circle $x^2 + y^2 = 10$.

Substituting $y = -x$ into $x^2 + y^2 = 10$, we get:

$$x^2 + (-x)^2 = 10$$

$$\implies 2x^2 = 10$$

$$\implies x^2 = 5$$

$$\implies x = \pm\sqrt{5}$$

Therefore, $x = \sqrt{5}, x = -\sqrt{5}$

Since $y = -x$, the points of intersection are

$(\sqrt{5}, -\sqrt{5})$ and $(-\sqrt{5}, \sqrt{5})$
