

1.6 PROBABILITY

$$\text{PROBABILITY} = \frac{\text{NUMBER OF SUCCESSES}}{\text{TOTAL POSSIBLE OUTCOMES}}$$

$$0 \leq P(\text{EVENT}) \leq 1$$

$P = 0 \rightarrow$ IMPOSSIBLE EVENT

$P = 1 \rightarrow$ GUARANTEED TO OCCUR

CONSIDER A STANDARD, FAIR DIE

$$P(1) = \frac{1}{6}$$

$$P(\text{odd}) = \frac{3}{6}$$

$$P(\# > 4) = \frac{2}{6}$$

CONSIDER A STANDARD DECK OF CARDS

$$P(\text{RED}) = \frac{26}{52}$$

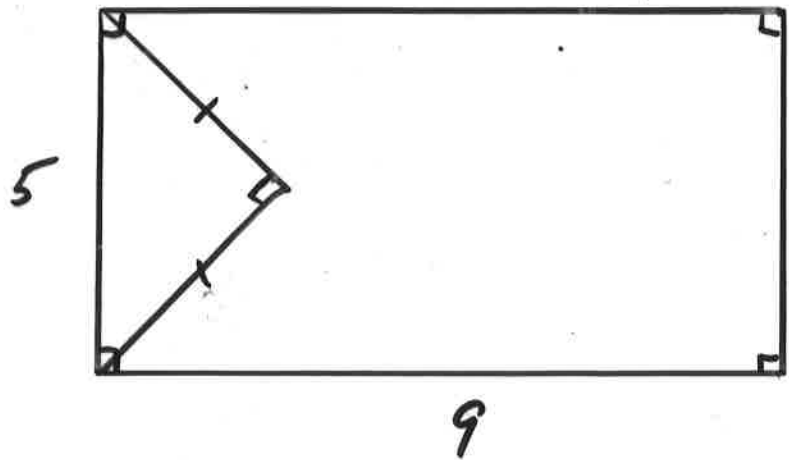
$$P(\text{RED CLUBS}) = \frac{0}{52}$$

$$P(\text{CLUBS}) = \frac{13}{52}$$

$$P(\text{FACE CARD}) = \frac{12}{52}$$

↑ J, Q, K

GEOMETRIC PROBABILITY



EX: FIND THE PROBABILITY THAT A POINT CHOSEN AT RANDOM IN THE RECTANGLE LIES INSIDE THE TRIANGLE.

$$P(\text{in } \Delta) = \frac{\text{AREA OF TRI}}{\text{AREA OF RECT}}$$
$$= \frac{\frac{1}{2} \left(\frac{5}{\sqrt{2}} \right) \left(\frac{5}{\sqrt{2}} \right)}{9 \cdot 5}$$

$$= \frac{\frac{25}{4}}{45} = \frac{25}{4} \cdot \frac{1}{45} = \frac{5}{4} \cdot \frac{1}{9}$$

$$= \frac{5}{36}$$

H.W. 6-14, 17-20, 24-37, 42