



CREST Mathematics Olympiad (CMO) Worksheet *for* Class 9



Topic
Probability



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Worksheet on Probability

1. A six-sided dice was rolled 1500 times and the number of times each outcome (1, 2, 3, 4, 5 and 6) occurred is provided below:

Outcome	1	2	3	4	5	6
Frequency	123	321	235	315	186	320

What is the probability of the outcome 4 not happening on the dice?

- a. 0.21
b. 41
c. 59
d. 79
2. A plastic bottle factory manufactures small and large sized bottles. Small-sized bottles include 50 mL, 100 mL, 200 mL and 250 mL. Large-sized bottles include 500 mL, 1000 mL and 500 mL. The manufacturing of bottles of different capacities per day is shown as follows:

Capacity of bottle	50 mL	100 mL	200 mL	250 mL	500 mL	1000 mL	5000 mL
Number of bottles	780	1030	860	735	786	544	765

What is the probability of manufacturing large-sized bottles?

- a. 0.38
b. 0.48
c. 0.62
d. 0.52
3. What is the probability of at least one tail when three coins are tossed simultaneously?
- a. 0.125
b. 0.375
c. 0.625
d. 0.875
4. A carton contains 25 balls bearing numbers: 1, 2, 3, 4,, 25. A ball is drawn at random from the carton. What is the probability of the number divisible by 3 or 7 on the balls?
- a. $\frac{1}{5}$
b. $\frac{2}{5}$
c. $\frac{3}{5}$
d. $\frac{4}{5}$

5. In a board game, there is a spinner divided into 12 equal sections: Black, Grey, Red, Blue, Orange, White, Brown, Pink, Yellow, Green, Purple and Silver. If you spin the spinner, what is the probability of it not landing on Green?
- a. 8.33%
 - b. 28.33%
 - c. 71.67%
 - d. 91.67%

Answer Key

1. d - 0.79

Explanation: $n(S)$ = Total frequency = 1500

$n(E)$ = Frequency at 4 occurs on the dice = 315

Probability of the outcome 4 happening on the dice is:

$$P(E) = n(E)/n(S) = 315/1500 = 0.21$$

Probability of the outcome 4 not happening on the dice is:

$$P(E') = 1 - P(E) = 1 - 0.21 = 0.79$$

2. a - 0.38

Explanation: $n(S)$ = Total bottles manufactured per day

$$= 780 + 1030 + 860 + 735 + 786 + 544 + 765$$

$$= 5500$$

$n(E)$ = Total large-sized bottles manufactured per day

$$= 786 + 544 + 765$$

$$= 2095$$

Probability of manufacturing large-sized bottles is:

$$P(E) = n(E)/n(S) = 2095/5500 = 0.38$$

3. d - 0.875

Explanation: Total outcomes, $S = \{HHH, TTT, HHT, TTH, HTT, THH, THT\}$

$n(S)$ = Number of total outcomes = 8

Favourable outcomes to get at least one tail,

$$E = \{TTT, HHT, TTH, HTT, THH, THT\}$$

$n(E)$ = Favourable outcomes to get at least one tail = 7

Probability of at least one tail when three coins are tossed simultaneously is:

$$P(E) = n(E)/n(S) = 7/8 = 0.875$$

4. b - 2/5

Explanation: S = Numbers on the balls = $\{1, 2, 3, \dots, 25\}$

$n(S) = 25$

E = Numbers divisible by 3 or 7 = $\{3, 6, 7, 9, 14, 12, 15, 18, 21, 24\}$

$n(E) = 10$

Probability of at least one tail when three coins are tossed simultaneously is:

$$P(E) = n(E)/n(S) = 10/25 = 2/5$$

5. d - 91.67%

Explanation: $n(S)$ = Total number = 12

$n(E)$ = 1

Probability of spinner landing on Green is:

$P(E) = n(E)/n(S) = 1/12 = 1/12 \times 100 = 8.33\%$

Probability of spinner not landing on Green is:

$P(E') = 1 - P(E) = 100\% - 8.33\% = 91.67\%$

More Questions Coming Soon – Keep Learning!



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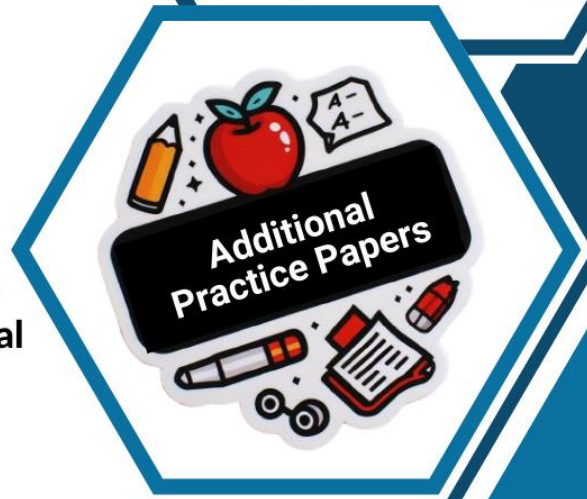
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