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Solved Probability Problems

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Solved probability problems and solutions are given here for a concept with clear understanding.

Students can get a fair idea on the probability questions which are provided with the detailed step-by-step answers to every question.

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 **IXL** Maths Practice

• UKG

% Class IV

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Σ Cla

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Match the following events with the corresponding probabilities:

- | | |
|-------------------------------------|-----------|
| (i) The objects is not a circle | (a) 5/16 |
| (ii) The objects is a triangle | (b) 4/16 |
| (iii) The objects is not a triangle | (c) 7/16 |
| (iv) The objects is not a square | (d) 9/16 |
| (v) The objects is a circle | (e) 12/16 |
| (vi) The objects is a square | (f) 11/16 |

Solution:

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$P(\text{the object is a circle})$

= Number of circles/Total number of objects

= $7/16$

$P(\text{the object is not a circle})$

= $1 - P(\text{the object is a circle})$

= $1 - 7/16$

= $(16 - 7)/16$

= $9/16$

(ii) The objects is a triangle:

$P(\text{the object is a triangle})$

= Number of triangle/Total number of objects

= $4/16$

(iii) The objects is not a triangle:

$P(\text{the object is a triangle})$

= Number of triangles/Total number of objects



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UKG

Class I

Class II

Class III

Class IV

Class V

Class VI

Class VII

Class VIII

Class IX

Class X

Class XI

Class XII

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$$= (16 - 4)/16$$

$$= 12/16$$

(iv) The objects is not a square:

P(the object is a square)

= Number of squares/Total number of objects

$$= 5/16$$

P(the object is not a square)

= 1 - P(the object is a square)

$$= 1 - 5/16$$

$$= (16 - 5)/16$$

$$= 11/16$$

(v) The objects is a circle:

P(the object is a circle)

= Number of circles/Total number of objects

$$= 7/16$$

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Match the following events with the corresponding probabilities are shown below:

- | | |
|-------------------------------------|-------------|
| (i) The objects is not a circle | (d) $9/16$ |
| (ii) The objects is a triangle | (b) $4/16$ |
| (iii) The objects is not a triangle | (e) $12/16$ |
| (iv) The objects is not a square | (f) $11/16$ |
| (v) The objects is a circle | (c) $7/16$ |
| (vi) The objects is a square | (a) $5/16$ |

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- | | |
|---|---------------------|
| (i) The card is a diamond | (a) $\frac{1}{2}$ |
| (ii) The card is a red king | (b) $\frac{1}{13}$ |
| (iii) The card is a king or queen | (c) $\frac{1}{26}$ |
| (iv) The card is either a red or an ace | (d) $\frac{12}{13}$ |
| (v) The card is not a king | (e) $\frac{2}{13}$ |
| (vi) The card is a five or lower | (f) $\frac{1}{4}$ |
| (vii) The card is a king | (g) $\frac{4}{13}$ |
| (viii) The card is black | (h) $\frac{7}{13}$ |

Solution:

Total number of playing cards = 52

(i) The card is a diamond:

Number of diamonds in a deck of 52 cards = 13

$P(\text{the card is a diamond})$

= Number of diamonds/Total number of playing cards

= $\frac{13}{52}$

= $\frac{1}{4}$

(ii) The card is a red king:

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$$= 2/52$$

$$= 1/26$$

(iii) The card is a king or queen:

Number of kings in a deck of 52 cards = 4

Number of queens in a deck of 52 cards = 4

Total number of king or queen in a deck of 52 cards = $4 + 4 = 8$

P(the card is a king or queen)

= Number of king or queen/Total number of playing cards

$$= 8/52$$

$$= 2/13$$

(iv) The card is either a red card or an ace:

Total number of red card or an ace in a deck of 52 cards = 28

P(the card is either a red card or an ace)

= Number of cards which is either a red card or an ace/Total number of playing cards

$$= 28/52$$

$$= 7/13$$

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$P(\text{the card is a king})$

$= \text{Number of kings} / \text{Total number of playing cards}$

$= 4/52$

$= 1/13$

$P(\text{the card is not a king})$

$= 1 - P(\text{the card is a king})$

$= 1 - 1/13$

$= (13 - 1)/13$

$= 12/13$

(vi) The card is a five or lower:

Number of cards is a five or lower = 16

$P(\text{the card is a five or lower})$

$= \text{Number of card is a five or lower} / \text{Total number of playing cards}$

$= 16/52$

$= 4/13$

(vii) The card is a king:



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$$= 1/13$$

(viii) The card is black:

Number of black cards in a deck of 52 cards = 26

P(the card is black)

= Number of black cards/Total number of playing cards

$$= 26/52$$

$$= 1/2$$


Match the following events with the corresponding probabilities are shown below:

- | | |
|---|--------------------|
| (i) The card is a diamond | (f) $1/4$ |
| (ii) The card is a red king | (c) $1/26$ |
| (iii) The card is a king or queen | (e) $2/13$ |
| (iv) The card is either a red or an ace | (h) $7/13$ |
| (v) The card is not a king | (d) $12/13$ |
| (vi) The card is a five or lower | (g) $4/13$ |
| (vii) The card is a king | (b) $1/13$ |
| (viii) The card is black | (a) $1/2$ |



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(ii) not black.

Solution:

(i) Total number of possible outcomes = $3 + 4 = 7$.

Number of favourable outcomes for the event E.

$$= \text{Number of black balls} = 4.$$

$$\begin{aligned}\text{So, } P(E) &= \frac{\text{Number of Favourable Outcomes for the Event E}}{\text{Total Number of Possible Outcomes}} \\ &= \frac{4}{7}.\end{aligned}$$

(ii) The event of the ball being not black = \bar{E} .

Hence, required probability = $P(\bar{E})$

$$= 1 - P(E)$$

$$= 1 - \frac{4}{7}$$

$$= \frac{3}{7}.$$

4. If the probability of Serena Williams a particular tennis match is 0.86, what is the probability of her losing the match?

Solution:



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$$= 1 - 0.86$$

$$= 0.14$$

$$= \frac{14}{100}$$

$$= \frac{7}{50}.$$

5. Find the probability of getting 53 Sunday in a leap year.

Solution:

A leap year has 366 days. So, it has 52 weeks and 2 days.

So, 52 Sundays are assured. For 53 Sundays, one of the two remaining days must be a Sunday.

For the remaining 2 days we can have

(Sunday, Monday), (Monday, Tuesday), (Tuesday, Wednesday), (Wednesday, Thursday), (Thursday, Friday), (Friday, Saturday), (Saturday, Sunday).

So, total number of possible outcomes = 7.

Number of favourable outcomes for the event $E = 2$, [namely, (Sunday, Monday), (Saturday, Sunday)].

So, by definition: $P(E) = \frac{2}{7}$.

6. A lot of 24 bulbs contains 25% defective bulbs. A bulb is drawn at

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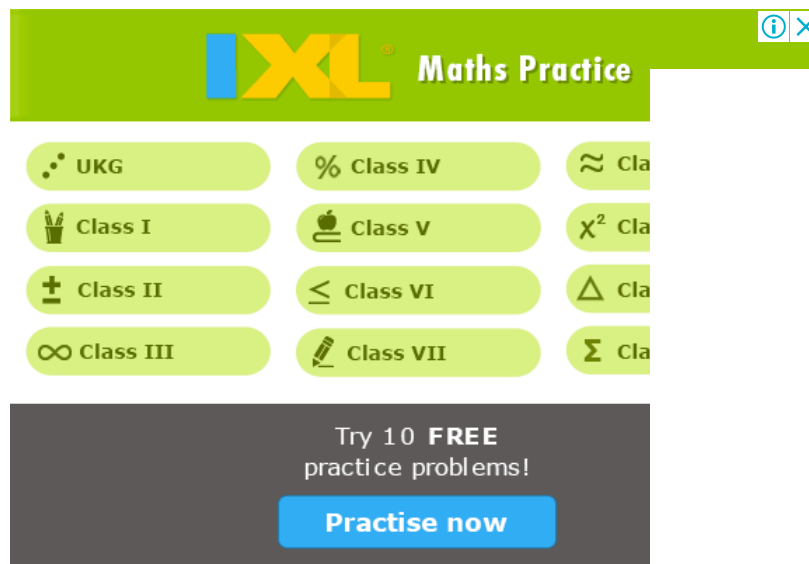
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$$25\% \text{ of } 24 = \frac{25}{100} \times 24 = 6.$$

So, there are 6 defective bulbs and 18 bulbs are not defective.

After the first draw, the lot is left with 6 defective bulbs and 17 non-defective bulbs.



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So, when the second bulb is drawn, the total number of possible outcomes = 23 (= 6 + 17).

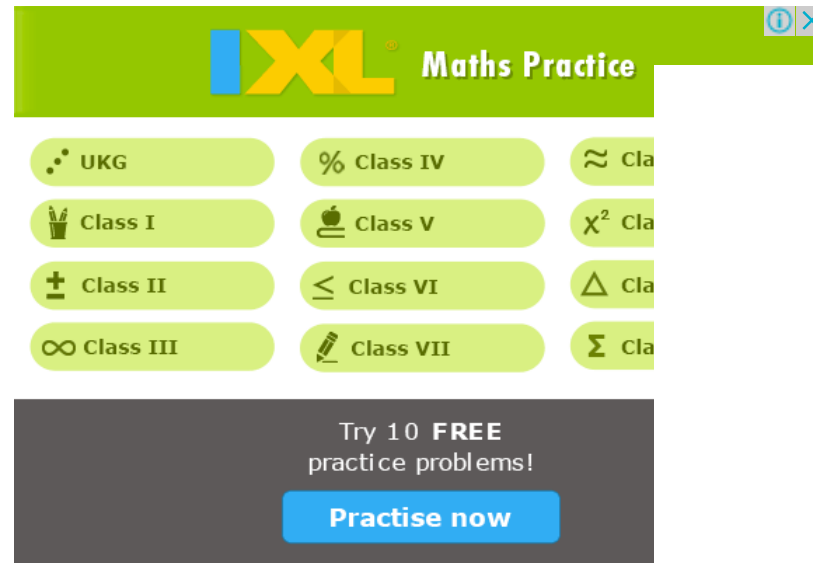
Number of favourable outcomes for the event E = number of non-defective bulbs = 17.

So, the required probability = $P(E) = \left(\frac{17}{23}\right)$.

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Moving forward to the theoretical probability which is also known as classical probability or priori probability we will first discuss about collecting all possible outcomes and equally likely outcome. When an experiment is done at random we can collect all possible outcomes



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Probability in everyday life, we come across statements such as: Most probably it will rain today. Chances are high that the prices of petrol will go up. I doubt that he will win the race. The words 'most probably', 'chances', 'doubt' etc., show the probability of occurrence



[Worksheet on Playing Cards | Playing Cards Probability | With Answers](#)

In math worksheet on playing cards we will solve various types of practice probability questions to find the probability when a card is drawn from a pack of 52 cards. 1. Write down the total number of possible outcomes when a card is drawn from a pack of 52 cards.



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