Session 32 | Mathematics of Chance 1 | Worksheet 32

1) A coin is tossed .

a) What are the possible outcomes ? What is the total number of outcomes ?

b) What is the probability of getting head ?

c) What is the probability of getting tail?

Answers

a) Outcomes are Head and Tail. Head is denoted by H and tail is denoted by T.

b) $\frac{1}{2}$

c) $\frac{1}{2}$

2) Two coins are tossed together .

a) What are the possible outcomes ? What is the total number of outcomes ?

b) What is the probability of getting both head ?

c) What is the probability of getting both tail?

d) What is the probability of getting one head and one tail?

e) What is the probability of getting atleast one head ?

Answers

a) Outcomes are (head,head)(tail,head)(head,tail),(tail,tail). Head is denoted by H and tail is denoted by T.

b) $\frac{1}{2}$

c) $\frac{1}{2}$

3) A die is tossed .

a) What are the possible outcomes ? What is the total number of outcomes ?

b) What is the probability of getting an even numbered face?

c) What is the probability of getting odd numbered face?

d) What is the probability of getting a prime number ?

e) What is the probability of not getting a prime number ?

Answers

a) Outcomes are $1, 2, 3, 4, 5, 6$. Number of outcomes is 6

b) $\frac{3}{6} = \frac{1}{2}$

c) $\frac{3}{6} = \frac{1}{2}$

d) $\frac{3}{6} = \frac{1}{2}$

e) $\frac{3}{6} = \frac{1}{2}$

4) Numbers $1, 2, 3, \cdots 25$ are written in small paper pieces and put in a box.One is taken from it without looking into the box.

a) What is the probability of getting an even number?

b) What is the probability of getting an odd number?

c) What is the probability of getting a prime number?

Answers

a) $\frac{12}{25}$

b) $\frac{13}{25}$

c) $\frac{9}{25}$

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[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Session 33 | Mathematics of Chance 2 | Worksheet 33

1) A vessel contains 3 black beads and 2 white beads. One is taken from the vessel without looking into the vessel.

   a) What is the probability of getting black bead?

   b) What is the probability of getting white bead?

Answers

a) Probability of getting black bead $= \frac{3}{5}$

a) Probability of getting white bead$= \frac{2}{5}$

2) A box contains 10 cards on which one of the numbers $1, 2, 3 \cdots 10$ is written in each card.One card is taken from the box at random.

   a) What is the probability of getting a an even numbered card

   b) What is the probability of getting an odd numbered card?

   c) What is the probability of getting a card on which a prime number is written ?

   d) What is the probability of getting a perfect square on the card.

Answers

a) Probability of egtting even $= \frac{5}{10}$

b) Probability of getting odd$= \frac{5}{10}$

c) Probability of getting prime number$= \frac{4}{10}$
Prime numbers $2, 3, 5, 7$

d) Probability of getting perfect square$= \frac{3}{10}$
perfect squares $1, 4, 9$

3) Each of the numbers from 1 to 100 are written on small paper pieces .One is taken from the card at random.

   a) How many perfect squared cards are there in the box?

   b) What is the probability of getting a perfect squared card?

   c) What is the probability of getting an even numbered card?

d) What is the probability of getting an odd numbered card? 2

e) What is the probability of not getting a perfect numbered card?

Answers

a) There are 10 perfect squares

b) Probability of getting a perfect square$= \frac{10}{100} = \frac{1}{10}$

c) Probability of getting even perfect square$= \frac{5}{100} = \frac{1}{20}$

d) Probability of getting odd perfect square$= \frac{5}{100} = \frac{1}{20}$

e) Probability of not getting a perfect square $= 1 - \frac{1}{10} = \frac{9}{10}$

4) A die in which the numbers 1 to $6$are written on the faces is thrown

a) What is the probability of falling an even numbered face?

b) What is the probability of getting an odd numbered face ?

c) What is the probability of getting a prime numbered face?

Answers

a) Probability of falling even face$= \frac{3}{6} = \frac{1}{2}$

b) Probability of falling odd face $= \frac{3}{6} = \frac{1}{2}$

c) Probability of falling prime numbered face $= \frac{3}{6} = \frac{1}{2}$

5) Two digit numbers are written in small paper pieces and placed in a box.One is taken from the box at random

a) How many multiples of 5 are there in the box?

b) What is the probability of getting a multiple of 5?

c) What is the probability of not getting a multiple of 5?

Answers

a) $10, 11, 12 \cdots 99$are the two digit numbers . Number of two digit numbers is 90
Multiples of five are $10, 15, 20 \cdots 95$
Number of numbers $= 18$

b) Probability of getting a multiple of five $= \frac{18}{90}$

c) Probability of not getting a multiple of five $1 - \frac{18}{90} = \frac{72}{90}$

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[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 34 | Mathematics of Chance 3 | Worksheet 34

1) Numbers $1, 2, 3 \cdots 17$ are written in small paper cards and placed in a box.One card is taken from the box at random.

   a) What is the probability of getting odd numbered card?
   b) What is the probability of getting prime numbered card?
   c) What is the probability of getting a multiple of 3?
   d) What is the probability of getting a multiple of 2 and 3?

Answers

a) $\frac{9}{17}$
b) $\frac{7}{17}$
c) $\frac{5}{17}$
d) $\frac{2}{17}$

2) A die numbered 1 to 6 are thrown.

   a) What is the probability of falling a number less than 4?
   b) What is the probability of getting a multiple of 2?
   c) What is the probability of falling a multiple of both 2 and 3
   d) What is the probability of not falling a prime number?

Answers

a) $\frac{3}{6}$
b) $\frac{3}{6}$
c) $\frac{1}{6}$
d) $\frac{3}{6}$

3) Integers from -4 to 4 are written in small paper pieces and placed in a box. One is drawn from the box at random .If the outcome is denoted by x,

   a) What is the probability of getting a number satisfying the condition $\mid x \mid < 2$?
   b) What is the probability of getting a number satisfying the condition $\mid x \mid \leq 2$?
   c) What is the probability of getting a number satisfying the condition $\mid x \mid \geq 3$?
   d) What is the probability of getting a number satisfying the condition $\mid x \mid \leq 3$?

Answers

a) $\frac{3}{9}$
b) $\frac{5}{9}$
c) $\frac{4}{9}$
d) $\frac{7}{9}$

4) Two dice numbered $1 \text{to} 6$ are thrown at together. 2

a) Write the outcomes as pairs

b) What is the probability of the occurence of equal numbers ?

c) What is the probability of the occurence of perfect squares ?

d) What is the probability of the occurence of multiple of 2 in one die and multiple of 3 in other die ?

Answers

a) $(1,1),(1,2),(1,3),(1,4),(1,5),(1,6)$
$(2,1),(2,2),(2,3),(2,4),(2,5),(2,6)$
$(3,1),(3,2),(3,3),(3,4),(3,5),(3,6)$
$(4,1),(4,2),(4,3),(4,4),(4,5),(4,6)$
$(5,1),(5,2),(5,3),(5,4),(5,5),(5,6)$
$(6,1),(6,2),(6,3),(6,4),(6,5),(6,6)$

b) $\frac{6}{36}$

c) $(1,1),(1,4),(4,1),(4,4)$.
Probability $\frac{4}{36}$

d) $(2,3),(4,3),(6,3),(2,6),(4,6),(6,6),(3,2),(3,4),(3,6),(6,2),(6,4)$
Probability $\frac{11}{36}$

5) What is the probability of getting 5 Sundays in the month December?

Answers

There are 31 days in December. 28days decide 4weeks ,so four Mondays.
The combinations are(Sunday, Monday,Tuesday),(Monday,Tuesday ,Wednesday),(Tuesday, Wednesday ,Thursday),
(Wednesday, Thusday, Friday),(Thusday, Friday ,Saturday),(Friday, Saturday,Sunday),
(Saturday,Sunday, Monday) .
There are three combinations in which Moday occur.Probability of occuring five Mondays is $\frac{3}{7}$

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[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 35 | Probability 4 | Worksheet 35

1) Two digit numbers are formed by the digits $1, 2, 3, 4$ written in small paper pieces and placed in a box.

   a) How many cards are there in the box?

   b) If one card is taken from the box at random , what is the probability of getting an even numbered card?

   c) What is the probability of getting an odd numbered card?

   d) What is the probability of getting a card with equal digits?

Answers

a) Numbers are
$11, 12, 13, 14$
$21, 22, 23, 24$
$31, 32, 33, 34$
$41, 42, 43, 44$
Total number $= 16$

b) Eight of them are even. Probability of getting even is $\frac{8}{16} = \frac{1}{2}$

c) Eight of them are odd . Probability of getting odd is $\frac{8}{16} = \frac{1}{2}$

d) $11, 22, 33, 44$ are the numbers with equal digits .Probability $\frac{4}{16} = \frac{1}{4}$

2) The numbers $2^1, 2^2, 2^3 \cdots 2^{50}$ are written in small paper pieces and placed in a box.

   a) Write the sequence of numbers comes in the right end of these numbers ?

   b) If one is taken from the box at random, then what is the probability of getting a number with 4 in ones place?

   c) What is the probability of getting a number with 8 in ones place?

   d) What is the probability of getting a number with 2 in ones place?

   e) what is the probability of not getting a number with 2 in ones place?

Answers

a) $2, 4, 8, 6, 2, 4, 8, 6 \cdots$

b) Up to 2^{48} , the set of digits $2, 4, 8, 6$repeats 12times . One's palce of 2^{49} is 2 and one's place of 2^{50} is 4.
Probability of getting 4 in one's palce is $= \frac{13}{50}$

c) Probability of getting 8in one's place is $= \frac{12}{50}$

d) Probability of getting 2 in one'splace is $= \frac{13}{50}$

e) Proability of getting not getting 2 in one's place is $= 1 - \frac{13}{50} = \frac{37}{50}$

3) Two digit numbers are written in small paper pieces and placed in a box.

   a) How many paper slips are there in the box?

   b) If one is taken from the box, what is probability of getting a number with digits same?

c) If one is taken from the box, what is probability of getting a number in which the product of the digits a prime number.

d) What is the probability of getting a prime number?

Answers

a) $10, 11, 12 \cdots 99$ are the even numbers . There are 90 even numbers

b) Numbers with same digits are $11, 22, 33, 44, 55, 66, 77, 88, 99$
Total number of these numbers is 9
Probability$= \frac{9}{90} = \frac{1}{10}$

c) In the two digit numbers with product of the digits a prime , one digit is $1$and other digit is one of the numbers $2, 3, 5, 7$
Numbers are $12, 13, 15.17, 21, 31, 51, 71.$
Probability $= \frac{8}{90}$

d) There are 25prime numbers below 100. 4 of them are one digit primes and the rest of the 21numbers are two digit primes .Probability is $= \frac{21}{90}$

4) The numbers $1^2, 2^2, 3^2 \cdots 100^2$are written in small slips and placed in a box.Consider the remainders obtained by dividing these numbers by 3.

a) Write the remainders as a sequence

b) One slip is taken from the box at random. What is the probability of getting a number which gives 1 as the remainder?

c) What is the probability of getting a number which gives2 as the remainder ?

d) What is the probability of getting a number which gives0 as the remainder ?

Answers

a) Sequence is $1, 1, 0, 1, 1, 0 \cdots$

b) We can see 33 groups upto 2^{99}. Number of numbers with 1as the remainder is $66 + 1 = 67$ .Probability is $= \frac{67}{100}$

c) 2 cannot be the remainder when a perfect number is divided by 3.Probability $= 0$
(Possible remainders on dividing a perfect square by 3 are 1 and 0)

d) Probability $= \frac{33}{100}$

5) Two dices numbered $1, 2, 3, 4, 5, 6$ are thrown together.The outcome faces are written as pairs.

a) How many pairs are there ?

b) Make the list of pairs with sum 2 , 3 ,4 , 5 and 6 seperately

c) What is the probability of occuring the maximum sum

Answers

a) number of pairs $6 \times 6 = 36$

b) $(1,1) \rightarrow$sum $= 2$
$(1,2),(2,1) \rightarrow$sum $= 3$
$(1,3),(2,3),(3,1) \rightarrow$sum$= 4$
$(1,4),(4,1),(2,3)(3,2) \rightarrow$sum $= 5$
$(1,5),(5,1),(2,4)(4,2),(3,3) \rightarrow$sum $= 6$
$(1,6),(6,1),(2,5)(5,2),(3,4),(4,3) \rightarrow$sum$= 7$
Sums are $2,3,4,5,6,7 \cdots 12$.Largest is 12.

c) Proceeding like this there is only 1 pair with the largest sum 12.Probability $= \frac{1}{36}$

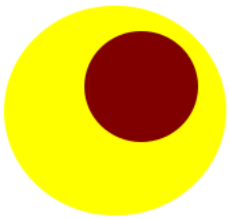
[1]

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 36 | Probability 5 | Worksheet 36

1) There are two circles in the picture.One is inside other.Radius of the small circle is half of the radius of the big circle.



a) If the radius of the small circle is r then what is the area of the small circle and big circle ?

b) If a fine dot is placed into the figure, whatb is the probability of falling the dot in the small circle?

c) What is the probability of falling the dot the yellow shaded part in the figure.

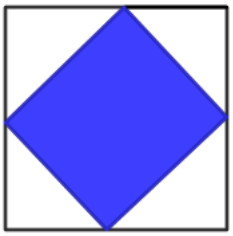
Answers

a) Area of small circle πr^2
Area of big circle$\pi \times (2r)^2 = 4\pi r^2$

b) Probability of falling the dot in the small circle is $\frac{\pi r^2}{4\pi r^2} = \frac{1}{4}$

c) Praobability of falling the dot in the yellow shaded part is $1 - \frac{1}{4} = \frac{3}{4}$

2) A square is drawn by joining the mid points of the sides of another square.The inner square is shaded blue.

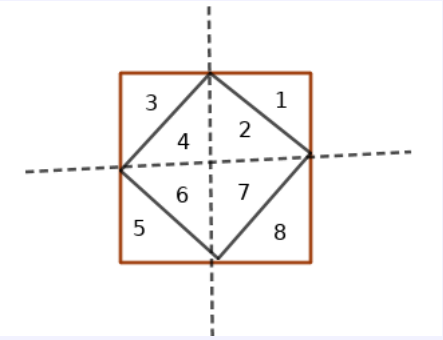


a) Divide the triangle into eight equal triangles by drawing two lines

b) A fine dot is placed into the figure. What is the probability of falling the dot in the inner square?

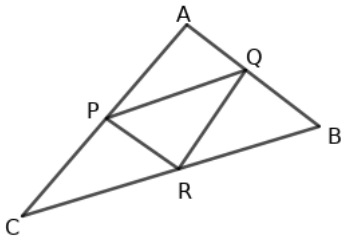
Answers

a) Look at the picture



b) Among eight equal triangles ,four of them determine the shaded square.ന്നായതാ $\frac{4}{8} = \frac{1}{2}$

3) Triangle PQR is drawn by joining the mid points of the sides of triangle ABC.



a) How many equal triangles are there in the figure?

b) A fine dot is placed into the figure. What is the probability of falling the dot in triangle PQR?

c) How many parallelograms are there in the picture?

d) A fine dot is placed into the figure. What is the probability of falling the dot in the parallelogram $PQRC$?

Answers

a) There are 4equal triangles .
$\triangle PQR, \triangle APQ, \triangle PCR, \triangle QRB$are .

b) $\frac{1}{4}$(Area of equal triangles are equal)

c) There are 3 parallelograms .
$PQRC, PQBR, PRQA$ are equal parallelograms .

d) To fall the dot in the parallelogram $PQRC$ it should either be in triangle PCR or triangle PQR
Probability is $\frac{2}{4} = \frac{1}{2}$

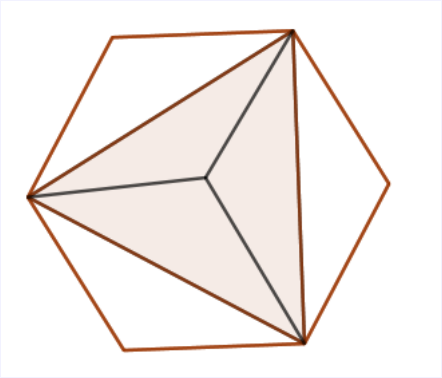
4) A triangle is drawn by joining the alternate vertices of a regular hexagon.

a) Divide the figure into 6 equal triangles

b) If a fine dot is placed into the figure , what is the probability of falling the dot in the shaded triangle?

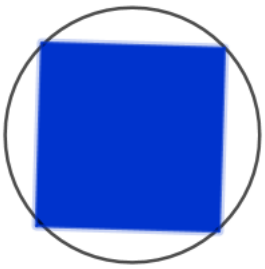
Answers

a) Figure



b) Among six equal triangles ,three make the shaded triangle .
Probability$= \frac{3}{6} = \frac{1}{2}$

5) A square is drawn in a circle . The vertices of the square are on the circle. A fine dot is placed into the figure at random. What is the probability of falling the dot in the shaded square.



Answers

⋆ If one side of the square a the diagonal is $d = \sqrt{a^2 + a^2} = \sqrt{2}a$
Radius of the circle is $\frac{a\sqrt{2}}{2} = \frac{a}{\sqrt{2}}$

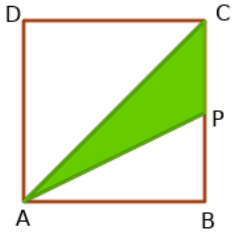
⋆ Area of the square a^2, area of the circle $\pi \times (\frac{a}{\sqrt{2}})^2 = \frac{\pi a^2}{2}$

⋆ Probability of falling the dot in the shade is $= a^2 \div \frac{\pi a^2}{2} = \frac{2}{\pi}$

Wisgrow Math A - Plus

Session 37 | Probability 6 | Worksheet 37

1) ACP is drawn in the square $ABCD$ and shaded .$P$is the mid point of the side of the square



a) If the side of the square is a then what is the altitude to the side PC of the shaded triangle.

b) If the side of the square is a then what is the area of the shaded triangle ?

c) If a fine dot is placed into the figure then what is the probability of falling the dot in the shaded triangle ?

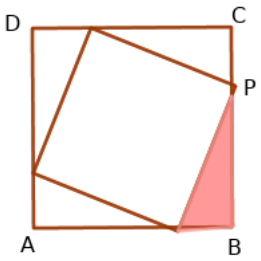
Answers

a) Altitude to the side PC is AB.$AB = a$
altitude $= a$

b) Base of triangle APC is $= \frac{a}{2}$,Height $= a$
Area $= \frac{1}{2} \times \frac{a}{2} \times a = \frac{a^2}{4}$

c) Probability$= \frac{a^2}{4} \div a^2 = \frac{1}{4}$

2) There are two squares in the figure.The perimetre of the outer square is 28cm, the perimetre of the inner square is 20cm



a) What is the area of the outer square?

b) What is the area of inner square?

c) What is the area of the shaded triangle ?

d) If a fine dot is placed into the figure then what is the probability of falling the dot in the shaded triangle?

Answers

a) One side of outer square $= \frac{28}{4} = 7$cm
Area$= 7^2 = 49$sq.cm

b) One side of inner square $\frac{20}{4} = 5$cm
Area $5^2 = 25$sq.cm

c) Sum of the area of the triangles in between the squares is
$49 - 25 = 24$sq.cm
Area of shaded part$= \frac{24}{4} = 6$sq.cm

d) Probability$= \frac{6}{49}$

3) The mid points of the two sides and one vertex of a square are joined in such a way as to get a triangle which is coloured in the picture.

a) If the side of the square is a, what is are of unshaded triangles ?

b) What is the area of the shaded triangle?

c) If a fine dot is placed into the figure then what is the probability of falling the dot in the coloured traingle?

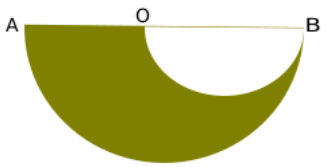
Answers

a) Total area of unshaded triangles $= (\frac{1}{2} \times a \times \frac{a}{2}) \times 2 + \frac{1}{2} \times \frac{a}{2} \times \frac{a}{2}$
$= \frac{a^2}{2} + \frac{a^2}{8} = \frac{5a^2}{8}$

b) Area of shaded part$= a^2 - \frac{5a^2}{8} = \frac{3a^2}{8}$

c) Probability$= \frac{3a^2}{8} \div a^2 = \frac{3}{8}$

4) O is the center of the circle of diametre AB.
There is another circle with diametre OB.If r is the radius of the small circle



a) What is the radius of the big circle ?

b) Find the area of big circle and small circle.

c) If a fine dot is placed into the figure what is the probability of falling the dot in the shaded part.

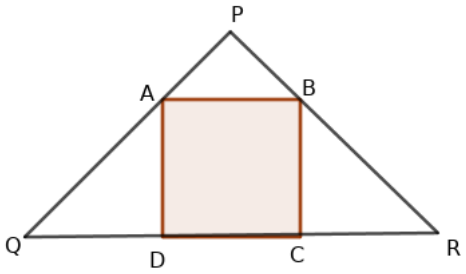
Answers

a) $2r$

b) Area of small semicircle $\frac{\pi r^2}{2}$
Area of big semicircle $\frac{\pi(2r)^2}{2} = 2\pi r^2$

c) Area of coloured part $2\pi r^2 - \frac{\pi r^2}{2} = 3\frac{\pi r^2}{2}$
Probability$= \frac{3}{4}$

5) Square $ABCD$ is drawn in triangle PQR.Also $QD = DC = CR$ .If the side of the square is a then

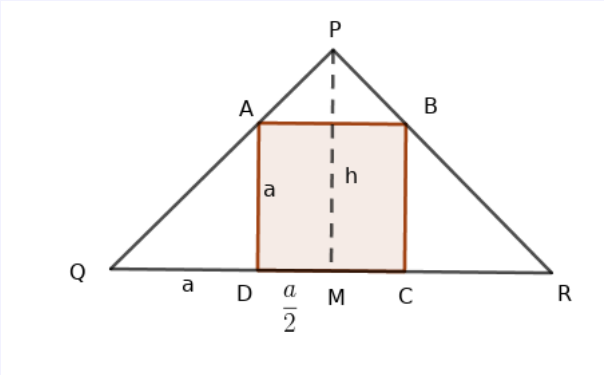


a) What is the altitude of the triangle PQR to the side PQ

b) What is the area of the triangle PQR?

c) If a fine dot is placed into the figure then what is the probability of falling the dot in the shaded square?

Answers



a) Triangle PMQ, Triangle ADQ are similar triangles .Height PM
$\frac{h}{a} = \frac{a+\frac{a}{2}}{a}$
$h = \frac{3a}{2}$

b) Area of triangle PQR is $= \frac{1}{2} \times QR \times PM = \frac{1}{2} \times 3a \times \frac{3a}{2} = \frac{9a^2}{4}$

c) Probability$= \frac{4}{9}$

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 38 | Probability 7 | Worksheet 38

1) A box contains three paper slips carrying numbers $2, 3, 4$. Another box contains paper slips carrying fractions$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$.One is taken from each box at random

   a) How many pairs are possible?

   b) What is the probability of getting the product of numbers in each pair a natural number?

   c) Wha is the probability of not getting the numbers in the pair whose product is not a natural number?

Answers

a) Number of pairs$= 3 \times 3 = 9$
$(2, \frac{1}{2}), (2, \frac{1}{3}), (2\frac{1}{4})$
$(3, \frac{1}{2}), (3, \frac{1}{3}), (3\frac{1}{4})$
$(4, \frac{1}{2}), (4, \frac{1}{3}), (4\frac{1}{4})$

b) Pairs with the product a natural number are $(2, \frac{1}{2}), (3, \frac{1}{3}), (4, \frac{1}{4}), (4, \frac{1}{2})$
There are four such pairs.
Probability of getting the product a natural number is $= \frac{4}{9}$

c) Probability of not getting the product a natural number is $1 - \frac{4}{9} = \frac{5}{9}$

2) Manju has three ornaments :Green , Red and Blue ear rings and chains.She ware it in different ways.

   a) How many ways she can ware the ornaments?

   b) What is the probability of waring ornaments of same colour?

   c) What is the probability of wearing the ornaments of different colours?

Answers

a) Number of pairs $3 \times 3 = 9$
(Green, Green),(Green ,Red),(Green,Blus)
(Blue, Green),(Blue ,Red),(Blue ,Blue)
(Red, Green),(Red,Red),(Red,Blue)

b) (Green,Green),(Red,Red),(Blue,Blue)
Probability$= \frac{3}{9} = \frac{1}{3}$

c) Probability of wearing different colours is $1 - \frac{1}{3} = \frac{2}{3}$

3) A box contains 4 black balls and 3 white balls. Another box contains 5 black balls and 3 white balls. One from each box is taken at random.

   a) How many pair of balls are possible ?

   b) What is the probability of getting both balls black?

   c) What is the probability of getting both balls white?

   d) What is the probability of getting balls of different colours?

Answers

a) Total number of possible selections $= (3+4) \times (5+3) = 7 \times 8 = 56$

b) Probability of getting both black $\frac{4\times5}{56} = \frac{20}{56}$

c) Probability of getting both white $\frac{3\times3}{56} = \frac{9}{56}$

d) Probability of getting balls of different colours $\frac{(4\times3)+(3\times5)}{56} = \frac{27}{56}$

4) A box contains four paper slips carrying numbers $1, 2, 3, 4$.Another box contains paper slips carrying numbers $1, 2, 3$. One from each box is taken at random and entered as pairs.

a) How many pairs are possible ?

b) What is the probability of getting a pair with the product of the digits odd?

c) What is the probability of getting a pair with the product of the digits even?

Answers

a) Number of pairs $4 \times 3 = 12$
$(1,1), (1,2), (1,3)$
$(2,1), (2,2), (2,3)$
$(3,1), (3,2), (3,3)$
$(4,1), (4,2), (4,3)$

b) Pairs of getting product odd are $(1,1)(1,3), (3,1)(3,3)$
Probability $\frac{4}{12} = \frac{1}{3}$

c) Probability of getting product even $= 1 - \frac{1}{3} = \frac{2}{3}$

5) There are 30boys and 20girls in $10A$. There are 15boys and 25girls in $10B$.
One student is selected from each class at random.

a) How many ways the selections can be made ?

b) What is the probability of getting both boys?

c) What is the probability of getting both girls?

Answers

a) Total number of pairs $(20+30) \times (15+25) = 50 \times 40 = 2000$

b) Probability of selecting both boys$= \frac{30\times15}{2000} = \frac{450}{2000} = \frac{9}{40}$

c) Probability of getting both girls$= \frac{20\times25}{2000} = \frac{500}{2000} = \frac{1}{4}$

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[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Session 39 | Probability 8 | Worksheet 39

1) A bag contains 4 black beads and 3 white beads.Another bag contains 4 black beads and 5 white beads.One is taken from each bag

   a) What is the probability of getting both white ?

   b) What is the probability of getting both black ?

   c) What is the probability of getting one white and one black?

   d) What is the probability of getting atleast one black?

Answers

a) First bag contains 7 beads and second bag contains 9 beads.When one from each box are taken we get $7 \times 9 = 63$ pairs.
Number of pairs with both white is $\times 3 \times 5 = 15$.
Probability of getting both white is $\frac{15}{63}$

b) Number of pairs with both black is $4 \times 4 = 16$
Probability of getting both black is $\frac{36}{63}$

c) Probability of getting one white and one black is $\frac{4\times5+3\times4}{63} = \frac{32}{63}$

d) Probability of getting atlest one black is $\frac{4\times5+3\times4+4\times4}{63} = \frac{48}{63}$

2) A box contains four paper strips on which the numbers $1, 2, 3, 4$ are written.Another box contains the strips $1, 2, 3$.One is taken from each box

   a) What are the possible outcomes

   b) What is the probability of getting the sum a multiple of 3?

   c) What is the probability of getting the sum a multiple of 2?

   d) what is the probability of getting the product a multiple of 6

Answers

a) $(1,1),(1,2)(1,3)$
$(2,1),(2,2),(2,3)$
$(3,1),(3,2)(3,3)$
$(4,1),(4,2),(4,3)$

b) Favourable outcomes are $(1,2),(2,1),(3,3),(4,2)$
Probability is $\frac{4}{12} = \frac{1}{3}$

c) Favourable outcomes are $(1,1),(3,1),(1,3),(2,2),(3,3),(4,2)$
Probability is $\frac{6}{12} = \frac{1}{2}$

d) Favourable outcomes are $(2,3),(3,2),(4,3)$
Probability is $\frac{3}{12} = \frac{1}{4}$

3) What is the probability of getting 53 Sundays on a leap year?

Answers

- ⋆ A leap year has 366 days . So it contains 52 full weeks and 2 days .
- ⋆ 53 rd Sunday is determined by these two days . These days can be (Sunday, Monday),(Mon, Tue),(Tue , Wed),(Wed, Thu), (Thu, Fri), (Fri,Sat),(Sat,Sun)
- ⋆ Possible outcomes are $(Sun, Mon), (Sat, Sun)$
- ⋆ Probability of getting 53 Sundays is $\frac{2}{7}$

3) What is the probability of getting 5 Sudays on December?

Answers

- ⋆ There are 31 days in December.So it has 4 weeks and 3 days .
- ⋆ Fifth Sunday is determined by these two days . These can be (Sun,Mon,Tue),(Mon, Tue, Wed),(Wed, Thu, Fri), (Thu,Fri, Sat), (Fri, Sat, Sun),(Sat, Sun, Mon)
- ⋆ Favourable outcomes are (Sun, Mon, Tue),(Fri, Sat, Sun),(Thu, Fri, Sat)
- ⋆ Probability is $\frac{3}{7}$

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[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721