1. During the lockdown period, many families got bored of watching $TV$ all the time. Out of these families, one family of 6 members decided to play a card game. 17 cards numbered 1, 2, 3, 4, . . . ,17 are put in a box and mixed thorougly. One card is drawn by one member at random and other family members bet for the chances of drawing the number either prime, odd or even etc.

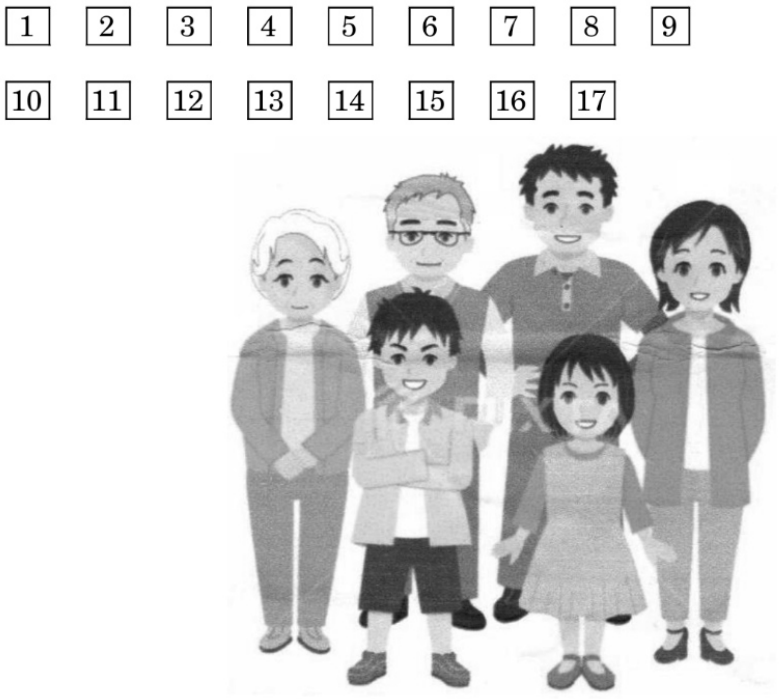


Figure 1:

Based on thee above, answer the following questions :

(a) The first member of the family draws a card at random and another member bets that it is an even prime number. What is the probability of his winning the bet ?

i. $\frac{2}{17}$
ii. $\frac{3}{17}$
iii. $\frac{1}{17}$
iv. $\frac{4}{17}$

(b) The second member of the family draws a card at random and some

other member bets that it is an even number. What is the probability of his winning the bet ?

i. $\frac{7}{17}$
ii. $\frac{8}{17}$
iii. $\frac{9}{17}$
iv. $\frac{10}{17}$

(c) What is the probability that the number on the card drawn at random is divisible by 5 ?

i. $\frac{5}{17}$
ii. $\frac{4}{17}$
iii. $\frac{3}{17}$
iv. $\frac{2}{17}$

(d) What is the probability that the number on the card drawn at random is multiple of 3 ?

i. $\frac{5}{17}$
ii. $\frac{6}{17}$
iii. $\frac{7}{17}$
iv. $\frac{8}{17}$

(e) What is the probability that the number on the card is a factor of 9 ?

i. $\frac{9}{17}$
ii. $\frac{3}{17}$
iii. $\frac{8}{17}$
iv. $\frac{1}{17}$

2. If the graph of a pair of lines $x - 2y + 3 = 0$ and $2x - 4y = 5$ be drawn, that what type of lines are drawn ?

3. (a) $\vec{D}$ and $\vec{E}$ are points on the sides $CA$ and $CB$ respectively of a triangle $ABC$, right-angled at $\vec{C}$.
Prove that $AE^2 + BD^2 = AB^2 + DE^2$

(b) Diagonals of a trapezium $ABCD$ with $AB \parallel DC$ intersect each other at the point $\vec{O}$. If $AB = 2CD$, find the ratio of the areas of triangles $AOB$ and $COD$.

4. Write the steps of construction of drawing a line segment $AB = 4.8$ cm and finding a point $\vec{P}$ on it suchthat $AP = \frac{1}{4}AB$.

5. Answer any *four* of the following questions :

(a) Given $\triangle ABC \sim \triangle PQR$. If $\frac{AB}{PQ} = \frac{1}{3}$, than $\frac{ar(\triangle ABC)}{ar(\triangle PQR)}$ is

i. $\frac{1}{3}$

ii. 3
iii. $\frac{2}{3}$
iv. $\frac{1}{9}$

(b) The length of an altitude of n equilateral triangle of side 8 cm is

i. 4 cm
ii. $4\sqrt{3}$ cm
iii. $\frac{8}{3}$ cm
iv. 12 cm

(c) In $\triangle PQR$, $PQ = 6\sqrt{3}$ cm, $PR = 12cm$ and $QR = 6cm$. The measure of angle $\vec{Q}$ is

i. $120°$
ii. $60°$
iii. $90°$
iv. $45°$

(d) If $\triangle ABC$ $\triangle PQR$ and $\angle B = 46°$ and $\angle R = 69°$, then the measure of $\angle A$ is

i. $65°$
ii. $111°$
iii. $44°$
iv. $115°$

(e) $\vec{P}$ and $\vec{Q}$ are the points on the sides $AB$ and $AC$ respectively of a $\triangle ABC$ such that $PQ \parallel BC$. If $AP \parallel PB = 2 : 3$ and $AQ = 4cm$ then $AC$ is equal to

i. 6 cm
ii. 8 cm
iii. 10 cm
iv. 12 cm

6. Answer any *four* of the following questions :

(a) $ABC$ and $BDE$ are two equilateral triangles such that $\vec{D}$ is the mid-point of $BC$. The ratio of the areas of the triangles $ABC$ and $BDE$ is

i. $2 : 1$
ii. $1 : 2$
iii. $4 : 1$
iv. $1 : 4$

(b) In $\triangle ABC$, $AB = 4\sqrt{3}$ cm, $AC = 8cm$ and $BC = 4cm$. The angle $\vec{B}$ is

i. $120°$

ii. $90^\circ$

iii. $60^\circ$

iv. $45^\circ$

(c) The perimeters of two similar triangles are 35 cm and 21 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of the second triangle is

i. 5.4 cm

ii. 4.5 cm

iii. 5.6 cm

iv. 15 cm

(d) In a $\triangle ABC, \vec{D}$ and $\vec{E}$ are points on the sides $AB$ and $Ac$ respectively such that $DE \parallel BC$ and $AD : DB = 3 : 1$. If $AE = 3.3cm$, then $AC$ is equal to

i. 4 cm

ii. 1.1 cm

iii. 4.4 cm

iv. 5.5 cm

(e) In the isosceles triangle $ABC$, if $AC = BC$ and $AB^2 = 2AC^2$, then $\angle C$ is equal to

i. $30^\circ$

ii. $45^\circ$

iii. $60^\circ$

iv. $90^\circ$