QB365 Model Question Paper 3

9th Standard CBSE

Mathematics

Reg.No. :						
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Time: 02:00:00 Hrs

Section-A 1) Area of a triangle = 1 (a) $\frac{1}{2} \times \text{Base} \times \text{Height}$ (b) $\text{Base} \times \text{Height}$ (c) $\frac{1}{3} \times \text{Base} \times \text{Height}$ (d) $\frac{1}{4} \times \text{Base} \times \text{Height}$ 2) The base and hypotenuse of a right triangle are respectively 6 cm and 10 cm long. Its area is 1 (a) 60 cm^2 (b) 120 cm^2 (c) 30 cm^2 (d) 24 cm^2 3) Heron's formula is 1 (a) $\Delta = \sqrt{s(s+a)(s+b)(s+c)}$ (b) $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$ (c) $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$, s=a+b+c (d) $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$, 2s=a+b+c 4) The area of a triangle whose sides are 13 cm, 14 cm, and 15 cm is 1 (a) 42 cm^2 (b) 86 cm^2 (c) 84 cm^2 (d) 100 cm^2 5) The sides of a triangular plot are in the ratio 4:5:6 and its perimeter is 150 cm. Then the sides are 1 (a) 4 cm, 5 cm, 6 cm (b) 40 cm, 50 cm, 60 cm (c) 8 cm, 10 cm, 12 cm (d) 120 cm, 150 cm, 180 cm 6) The side of a square is 5 cm. Its perimeter is 1 (a) 5 cm (b) 20 cm (c) 25 cm (d) 10 cm. 7) Which of the following is a solid figure? 1 (a) Circle (b) Cylinder (c) Square (d) Rectangle. 8) The side of a cube is 1 cm. The total surface area of the figure formed by joining two such cubes is 1 (a) 2(2+1+2) cm² (b) 2(2+2+2) cm² (c) 2(1+1+1) cm² (d) 2(1+1+2) cm² 9) When the information is gathered from a source which already had the information stored, the data obtained is 1 called (a) Primary data (b) Secondary data (c) Useless data (d) fictitious data 10) If the range of a distribution is 50 and class interval is 10, then two number of classes is 1 (a) 6 (b) 10 (c) 5 (d) 4 11) In the following frequency distribution, what is the frequency of the variable 13? 1 (a) 3 (b) 4 (c) 6 (d) 5.

Total Marks: 100

12) In a morning walk, I had 20 rounds of a park. During this period, I came across person A, person B, person C	1
and person D, 11 times, 7 times. 10 times and 5 times respectively. I want to represent this data gra[phically,	
which of the following is the best representation?	
(a) Bar graph (b) Histogram with unequal width (c) Histogram with equal width	
(d) Frequency polygon	
13) The ages (in years) of 10 children are given below 15,15,16,16,15,14,17,16,14,16. The modal age of the children	1
is:	
(a) 4 (b) 15 (c) 16 (d) 17	
14) Let m be the mid value and I be the upper limit of a class in a frequency distribution. The lower limit of the	1
class is:	
(a) 2m + l (b) 2m - l (c) m - l (d) m - 2l	
15) Marks o four students in statistics are 53,75,42,70. The arithmetic mean of their marks is	1
(a) 42 (b) 64 (c) 60 (d) 56.	
16) If the mean of 3,4,8,5,x,3,2,1 is 4, then the value of x is	1
(a) 2 (b) 4 (c) 6 (d) 8	
17) The mean of x_1, x_2 is 6 and mean of x_1, x_2, x_3 is 7. The value of x_3 is:	1
(a) 7 (b) 8 (c) 9 (d) 10	
18) The median of the data 5,8,7,6,11,13,12,15 is	1
(a) 9 (b) 8.5 (c) 11 (d) 9.5	
19) In data of 12 members arranged in ascending order, if the 9th observation is increased by 5, then median	1
increases by:	
(a) 0 (b) 4 (c) 5 (d) 6	
20) If A and B are the only two outcomes of an event and P(A)=0.32, then value of P(B) would be:	1
(a) 0.38 (b) 0.68 (c) 0.78 (d) 0.32	
Section-B	
21) Find the area of an equilateral triangle of side 10 cm.	2
22) Find the area of an isosceles triangle with two equal sides as 5 cm each and unequal side as 8 cm.	2



23) Find the area of the quadrilateral ABCD where AB = 7 cm, BC = 6 cm, CD = 12 cm, DA = 15 cm and AC = 9 cm.
24) A triangle and a parallelogram have the same base and the same area. If the sides of the triangle are 26 cm, 28
2

cm and 30 cm, and the parallelogram stands on the base 30 cm, find the height of the parallelogram.

25) Three cubes are placed adjacent to each other in a row. Find the ratio of the total surface area of the cuboid so formed and that of anyone of these cubes.

26) The dimensions of a rectangular box are in the ratio 2: 3: 4 and difference between the cost of covering it with	2
sheet of paper at the rate of Rs. 4 and Rs. 4.50 per m ² is Rs. 416. Find the dimensions of the box.	
27) The height of a right circular cylinder is 15 cm. Its curved surface area is 660 cm ² . Find the radius of its base.	2
28) A cylindrical tower is 5 m in diameter and 14 m high. Find the cost of white-washing its curved surface at Rs 10	2
per square metre.	
29) The total surface area of a cylinder of radius 7 cm is 880 m ² . Find the height and the volume of the cylinder.	2
30) The volume of a cone of base radius 3 cm is 12 π cm ² , Find the slant height of the cone.	2
31) Find the volume of a right circular cone whose slant height is 13 cm and the diameter of the base is 10 cm.	2
$(Take \ \pi = 3.14)$	
32) The marks obtained out of 75 by 30 students of a class in an examination are given below:	2
42,21,50,37,42,37,38,42,49,52,38,53,57,47,29,59,61,33,17,17,39,44,42,39,14,7,27,19,54,51	
Prepare a frequency distribution table in which the size of class intervals is the same and one class intervalis 0-	
10.	
33) 5 people were asking about the time in a week they spend in doing social work in their community. They said	2
10,7,13,20 and 15 hours, respectively. Find the mean (or average) time in a week denoted by them social work	
34) 10 numbers 8,11,15,19,x+1,2x-13,28,31,40, <mark>41 are w</mark> ritten in ascending order. If the median is 24, find x.	2
35) Find the mode of the following marks (out of 10) obtained by 20 students:	2
4,6,5,9,3,2,7,7,6,5,4,9,10,10,3,4,7,6,9,9.	
36) The mean of 100 observations is 60. If one observation of 50 is replaced by 110, then what will be the new	2
mean?	
37) The mean of observations is 50. If the observation 50 is replaced by 140, what will be the new mean of the	2
observations?	
38) A coin is tossed 1000 times with the following frequencies:	2
Head: 455, Tail: 545	
Compute the probability for each event	
39) A die is thrown. Find the probability of getting an odd number.	2
40) An insurance company selected 2000 drivers at random (i.e., without any preference of one driver over	2
another) in a particular city to find a relationship between age arid accidents. The data obtained are given in	

the following table:

Age of drivers	Accidents in one year				
(in years)	0	1	2	3	over 3
18-29	440	160	110	61	35
30-50	505	125	60	22	18
Above 50	360	45	35	15	9

Find the probabilities of the following events for a driver chosen at random from the city:

(i) being 18-29 years of age and having exactly 3 accidents in one year.

(ii) being 30--50 years of age and having one or more accidents in a year.

(iii) having no accidents in one year

41) In the following figure, calculate the area of the shaded portion:



42) The external and internal diameters of a hollow hemi-spherical vessel are 16 cm and 12 cm respectively. The 20

cost of painting 1sq. cm of surface is Rs 2. Find the cost of painting the vessel all over. $\left(\pi = \frac{22}{7}\right)$

43) Draw a histogram representing the following frequency distribution:

Marks	No. of students
0-10	3
10-20	5
20-30	8
30-40	10
40-50	7
50-60	2

44) Find the mean of the following marks of 20 students on a screening test. (out of 100)		
76,44,45,87,71,72,82,83,41 <mark>,32,75</mark> ,32,46,78,17,70,84,12,77,74		
45) The mean of 200 items wa <mark>s 50. La</mark> ter on, it was discovered that the two items were misread as 92 and 8	20	
instead of 192 and 88. Find the correct mean.		
46) A survey of 500 families was conducted to know their opinion about a particular detergent powder. If 375	20	
families liked the detergent powder and the remaining families disliked it, find the probability that a family		
chosen at random		
(i) likes the detergent powder		
(ii) does not like it.		
47) Cards marked with numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this	20	
box. Find the probability that the number on the card is		
(a) a number less than 14		
(b) a number which is a perfect square		

(e) a prime number less than 20

48) A survey conducted by an organization for the cause of illness and death among the women between the ages

S.No.	Causes	Female fatality rate (%)
1.	Reproductive health conditions	31.8
2.	Neuropstchiatric conditions	25.4
3.	Injuries	12.4
4.	Cardiovascular conditions	4.3
5.	Respiratory conditons	4.1
6.	Other causes	22.0

15-44 (in years) worldwide, found the following figures (in %):

(i) Represent the information given above graphically.

(ii) Which condition is the major cause of women's ill health and death worldwide?

(iii) Try to find out, with the help of your teacher, any two factors which play a major role in the cause in (ii)

above being the major cause.

Section-A	
1) (a) $\frac{1}{2} \times$ Base \times Height	1
2) (d) 24 cm ²	1
3) (d) $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$, 2s=a+b+c	1
4) (c) 84 cm ²	1
5) (b) 40 cm, 50 cm, 60 cm	1
6) (b) 20 cm	1
7) (b) Cylinder	1
8) (a) $2(2+1+2)$ cm ²	1
9) (b) Secondary data	1
10) (c) 5	1
11) (a) 3	1
12) (a) Bar graph	1
13) (c) 16	1
14) (b) 2m - l	1
15) (c) 60	1
16) (c) 6	1
17) (c) 9	1
18) (d) 9.5	1
19) (a) 0	1
20) (b) 0.68	1

Section-B

- 21) $25\sqrt{3}$ cm²
- 22) 12 cm²
- 23) 74.97 cm²
- 24) 11.2 cm
- 25) 7:3
- 26) 8 m, 12 m, 6 m
- 27) 7 cm
- 28) Rs 2200
- 29) 13 cm, 2002 cm³
- 30) 4 cm
- 31) 314 cm³

32) Class Frequency

0-10	1
10-20	4
20-30	3
30-40	7
40-50	7
50-60	7
60-70	1
Total	30

- 33) 13 hours.
- 34) 20
- 35) 9
- 36) 60.6
- 37) 54.5
- 38) Probability of getting head = $\frac{255}{1000} = \frac{91}{200}$ Probability of getting tail = $\frac{109}{200}$
- 39) <u>1</u> 2

40)
$$(i)\frac{61}{2000}$$
 $(ii)\frac{225}{2000} \approx 0.113$ $(iii)0.6525$

Section-C

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41) In right triangle PSQ, $PQ\frac{1}{2}2 = PS2 + QS2$ |By Pythagoras Theorem $=(12)^2+(16)^2$ = 144 + 256 = 400 $PQ = \sqrt{400} = 20 \text{ cm}$ \Rightarrow Now, for ΔPQR a=20cm, b=48cm, c=52cm $s = \frac{a+b+c}{2} = \frac{20+48+52}{2} = 60 \,\mathrm{cm}$:. : Area of $\triangle PQR = \sqrt{s(s-a)(s-b)(s-c)}$ $=\sqrt{60(60-20)(60-48)(60-52)}=\sqrt{(60)(40)(12)(8)}$ $=\sqrt{(6 \times 10)(4 \times 10)(6 \times 2)(8)}$ $= 6 \times 10 \times 8 = 480 \,\mathrm{cm}^2$ Area of $\Delta PSQ = \frac{1}{2} \times Base \times Altitude$ $=\frac{1}{2} \times 16 \times 12 = 96 \text{ cm}_2$ \therefore Area of the shaded portion =Area of \triangle PQR - Area of \triangle PSQ $2 - 6^2 = -6^2$ =480 - 96 =384 cm²

42)

External radius (R) = $\frac{16}{2}cm = 8cm$ Internal radius (r) $=\frac{12}{2}cm = 6cm$

: Total surface area

$$= 2\pi R^{2} + 2\pi r^{2} + \pi \left(R^{2} - r^{2}\right) = 2\pi (8)^{2} + 2\pi (6)^{2} + \pi \left(8^{2} - 6^{2}\right) = 128\pi + 72\pi + 28\pi = 228\pi = 228 \times \frac{22}{7} cm^{2}$$

∴ Cost of painting = Rs $_{228} \times \frac{22}{7} \times _2$ = Rs 1433.14



44) Mean

 $= \frac{76+44+45+87+71+72+82+83+41+32+75+32+46+78+17+70+84+12+77+74}{20}$ $= \frac{1198}{20} = 59.9$

45) ∴ Mean of 200 items = 50

$$\therefore$$
 Sum of items = $200 \times 50 = 10000$

Corrected sum = 10000 - (92 + 8) + (192 + 88)

= 10180

:. Correct mean
$$= \frac{10180}{200} = 50.9$$

46) P(likes the detergent) = $\frac{375}{500}$

$$=\frac{3}{4}$$

(ii) P(does not like the detergent)

=1-p(likes the detergent)

$$=1-\frac{3}{4}=\frac{1}{4}$$

20

47) Total number of cards in the box = 100

(a) Numbers less than 14 are 2,3,4,5,6,7,8,9,10,11,12,13

Their number = 12

Probability that the number on the card is a number less than 14

$$=\frac{12}{100}=\frac{3}{25}$$

(b) Perfect square numbers are 4,9,16,25,36,49,64,81,100

Their number = 9

Probability that the number on the card is a number which is a perfect square

 $=\frac{9}{100}$

(c) Prime numbers less than 20 are 2,3,5,7,11,13,17,19

Their number = 8

Probability that the number on the card is a prime number less than 20

$$=\frac{8}{100}=\frac{2}{25}$$

48) (i)



(ii) Reproduce health conditions is the major cause of women's ill health and death worldwide.(ii) Lack of proper diet, lack of advised exercises.