41. (5)

Let $m=2$, $n=3$, $o=-1$ and $p=4$

then $m(nop) = 2(3 \times -1 \times 4) = -24$

$$(op)(mn) = -24$$
$$ponm = -24$$
$$p(onm) = -24$$
$$(mp)(no) = -24$$

But $(mn)(mo)(mp) = (2 \times 3)(2 \times -1)(2 \times 4)$
$$= 6 \times -2 \times 8 = -96$$

42. (1)

Since $\quad \lfloor E = \lfloor B = 45°$
$$CE = BC$$

Let $\quad CE = BC = x$

Area of $\quad \Delta BCE = \dfrac{1}{2} \times CE \times BC = 8$
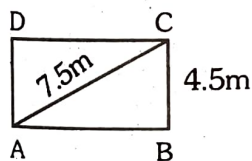$$\Rightarrow x^2 = 16$$
$$\Rightarrow x = 4$$

$BC = 4$ which is a side of square ABCD

∴ Area of the square ABCD = 16

43. (2)

AC = diagonal of rectangle closet = 7.5m

BC = 4.5 = AD (given)

$$\therefore AB = \sqrt{(7.5)^2 - (4.5)^2}$$
$$= \sqrt{56.25 - 20.25} = \sqrt{36}$$
$$= \pm 6$$
$$AB = 6$$

∴ Area of the closet = $6 \times 4.5 = 27$ sq.m.

44. (3)

Bill > John > Sam

$(z) \qquad (x) \qquad (y)$

∴ $z > x > y$

45. (1)

$mx + ny = 12my$; $my \neq 0$

divide both sides by my

$$\dfrac{mx}{my} + \dfrac{ny}{my} = \dfrac{12my}{my}$$

$$\Rightarrow \dfrac{x}{y} + \dfrac{n}{m} = 12$$

46. (4)

MN > NO given

All are true except $x = y + z$

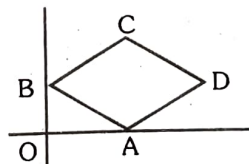(bigger side has greater angle opposite to it)

47. (3)

I. Any two lines r which are parallel to the third line are also parallel to each other – TRUE

II. Any two planes which are parallel to a third plane are parallel to each other – TRUE

III. Any two lines which are parallel to the same plane are parallel to each other. – FALSE

∴ (I) and (II) are true.

48. (4)

OA = 2, OB = 2

AB = $\sqrt{4+4} = \sqrt{8}$ (By Pythogores theorem)

Side of square ABCD = $\sqrt{8}$

∴ Area of square = $\left(\sqrt{8}\right)^2 = 8$.

49. (4)

Square has 4 line of symmetry.

Equilateral triangle has 3 line of symmetry.

Rectangle has 4 line of symmetry.

Circle has infinite number of line of symmetry.

Isosceles triangle has only one line of symmetry.

50. (2)

For 8 hours work he got Rs.8×8 = Rs.64

For 9 hours work he got Rs.$64 + 12$ = Rs.76

Since after 8 hours he got 1½ times
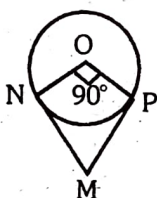
The rate of 8 hours.

for every 60 minutes after 8 hours he got Rs.12

∴ for 20 minutes after 8 hours he got Rs. 4

∴ total labour received = Rs. 80

51. (3)

Since MNOP is a square

$\Rightarrow \angle NOP = 90°$

Formula : If an arc subtends an angle $\theta°$ and the centre of the circle with radius r then the arc length $= \dfrac{2\pi r\theta}{360}$

Given

$\theta = 90°$

$\dfrac{2\pi r\theta}{360} = 4\pi$

$\Rightarrow \dfrac{2\pi r \times 90}{360} = 4\pi$

$\Rightarrow \qquad r = 8$

Side of the square MNOP = radius of the circle

side = 8

Area = $8^2 = 64$

52. (3)

At the end of 1 minute we have 500 litres of water in the tank.

Similarly at the end of 2 minutes we have 1000 litres of water.

For 7 minutes we have 3500 litres of water. For next 30 minutes we have $3500 + 400$ litres of water and

$\dfrac{300}{2}$ must be drained.

(i.e.) $3900 - 150 = 3750$ litres of water.

53. (2)

$$\text{Area of } \triangle ABC = \frac{1}{2} \times BC \times AB$$

$$= \frac{1}{2} \times 2\sqrt{2} \times 2\sqrt{2}$$

$$= 2 \times 2 = 4$$

$$AC = \sqrt{\left(2\sqrt{2}\right)^2 + \left(2\sqrt{2}\right)^2}$$

$$= \sqrt{8 + 8} = 4$$

$$\text{radius} = \frac{4}{2} = 2$$

$$\therefore \text{Area of shaded region} = \frac{\pi(2)^2}{2} - 4 = 2\pi - 4$$

54. (2)

$$\text{Cow can graze in } \frac{120°}{360°} \times \pi \times 15 \times 15$$

$$= \pi \times 15 \times 5$$

$$= 75\pi$$

55. (4)

For 5 days new robot produce $5 \times 24 = 120x$

Old line can produce $15x$

∴ total production = $120x + 15x = 135x$

56. (4)

$\angle BAD = \angle BCD = 90°$

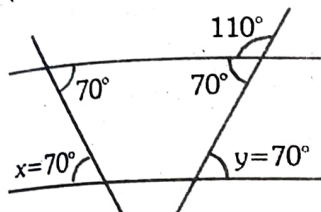Also since AB = BC

$\angle BAC = \angle BCA$

$\therefore \angle ACD = \angle DAC$

$\Rightarrow \triangle ACD$ is an isosceles triangle.

$\Rightarrow AD = CD$

57. (1)

Sasi has Rs. 10 ; Tarun has Rs. 5 ; Eswar has Rs. 3

If Sasi gave Rs. 3 to Eswar, Rs. 1 to Tarun

Then say Sasi has Rs. 6, Tarun Rs. 6 and Eswar has Rs.6

58. (2)

From the figure

$$\angle x = 70° \text{ and } \angle y = 70°$$

$$\therefore \quad x+y = 70+70 = 140°$$

59. (4)

Areas of a square and an equilateral triangle known, the perimeter can be derived.

60. (5)

Let $x=4$ then volume of cube of edge 4 is 64.

Volume of sphere $= \dfrac{4}{3}\pi r^3$

$r = 1$ Since diameter is 2.

Space occupied by 2 spheres $\simeq \dfrac{8}{3}\pi$.

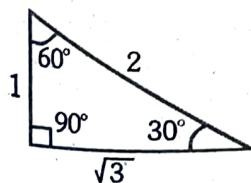If volume of cube is 1 then space occupied by packing powder is $64-\dfrac{8}{3}\pi = 64-8.38 = 55.62$

If volume of cube is 1 then

Space occupied by packing powder is

$\dfrac{1}{64} \times 55.62 = 0.869 = \dfrac{7}{8}$

61. (4)

If the vertex angles are 30°, and 60° and 90° then the side ratios $1 : \sqrt{3} : 2$ (see the figure).

By (1) the hypotenuse is twice the length of the shorter arm.

∴ We can conclude that the smaller angle is 30°.

So (1) is sufficient to derive the answer.

By (2) Larger acute angle is 60°.

Let the third angle be x.

Since given angle is right angle triangle

$$\Rightarrow 90+60+x = 180$$

$$\Rightarrow \qquad x = 30°$$

⇒ Smaller acute angle is 30°.

So (2) alone is sufficient to derive the answer.

Therefore either (1) alone or (2) alone is sufficient to derive the answer.

62. (5)

Volume of the soil = Volume of the flower box.

From (1) and (2) we get length and breadth of the box. But to find

Volume = length × breadth × height

From (1) and (2) do not give any information about height.

∴ To get height we need more data.

So (1) and (2) together are not sufficient to derive the answer.

63. (3)

Using (1) and (2) we can find the answer.

64. (4)

Let the man earn Rs. x in 2002

By (1) he earned Rs. 6500 in 2003 which is 12½% more than he earned in 2002.

i.e., $x + \left(\dfrac{12\frac{1}{2}}{100}\right)x = 6500$

from this we can derive x.

So (1) is sufficient to derive the answer.

Now consider (2)

By (2)

$x + \dfrac{x}{2} = 8666.67$

From this we can find x.

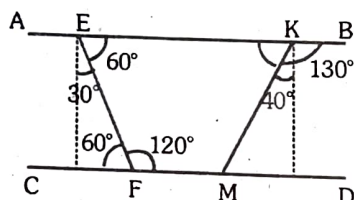So either (1) alone or (2) alone is sufficient to derive the answer.

65. (5)

Length of the bridge is not given in (1) and (2). So (1) and (2) are not sufficient.

We need more data.

66. (1)

Consider (1)

By (1) EF makes 30° with the vertical and KM makes 40° with the vertical

So we can conclude that EF is shorter than KM. So (1) is sufficient to derive the answer.

(2) is not sufficient because (2) does not give any information about the line EF.

67. (1)

$$\text{Length} = 40m.$$

by (1) perimeter $= 140$

$$\text{Perimeter} = 140$$
$$\text{Perimeter} = 2(l+b)$$
$$\Rightarrow \quad 2(l+b) = 140$$
$$l+b = 70$$
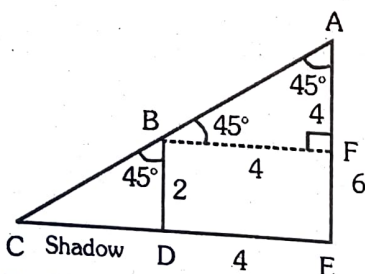$$b = 70-40 = 30$$
$$\text{Area} = lb = 40 \times 30 = 1200$$

So (1) is sufficient to derive the answer.

(2) does not give the exact value of the breadth (wide). So 2) is not sufficient.

68. (3)

By (1) and (2)

$$DE = 4$$
$$BF = 4$$

Also length of the pole $AE = 6$

$$AF = 6-2 = 4$$

So in the right angle triangle ABF, BF=4, AF=4

So ΔABF is an isosceles rightangled triangle.

Therefore $\underline{|BAF} = 45°$ and $\underline{|ABF} = 45°$

From the figure

$\underline{|CBD} = 45°$ and $\underline{|BCD} = 45°$

ΔBCD is an isosceles rightangled triangle.

Since BD=2 $\Rightarrow$ CD=2

Length of the shadow = 2m
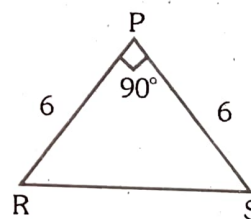
Using (1) and (2) together

We can derive the answer.

69. (4)

(1) alone is sufficient to derive the answer.

(2) alone is sufficient to derive the answer.
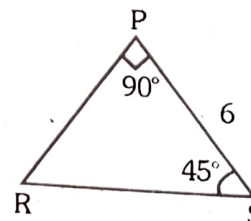
70. (4)

Consider (1) PR=6

Since ΔPRS is right angled.

$$PS^2 + PR^2 = RS^2$$
$$\Rightarrow \quad 6^2 + 6^2 = RS^2$$

$\Rightarrow$ (1) is sufficient to derive the answer.

Consider (2) $\qquad x = 45°$

From the above figure

$$\cos 45° = \frac{SP}{RS}$$
$$= \frac{6}{RS}$$
$$\Rightarrow \quad \frac{1}{\sqrt{2}} = \frac{6}{RS}$$
$$RS = 6\sqrt{2}$$

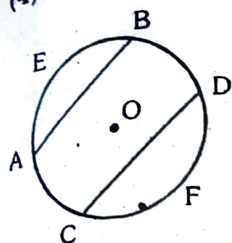So (2) alone is sufficient to derive the answer.

71. (3)

By (1) and(2) C is closer to A and train S arrives at C before train T.
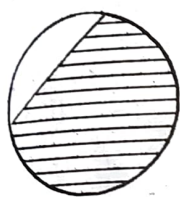
$\Rightarrow$ S is faster than T.

72. (4)

The length of the arc is directly proportional to the corresponding length of the chord.

By (1) Arc AEB is smaller than arc CFD.

$\Rightarrow$ Chord AB is smaller than chord CD.

So (1) alone is sufficient to derive the answer.

Result : The shaded area is inversely proportional to the corresponding length of the arc.

By (2) area CAEBD is larger than area ACFDB.

$\Rightarrow$ CD is smaller than AB.

So (2) alone is sufficient to derive the answer.

73. (5)

(1) and(2) are not sufficient to derive the answer. We need more data.

74. (4)

Given $a_n^2 = a_{n+1}$

By (1) $\qquad a_1 = 2$

$$a_2 = a^2 = 2^2 = 4$$
$$a_3 = a_2^2 = 4^2 = 16$$
$$a_4 = 16^2 = 256$$
$$\vdots$$

3 does not appear in the sequence.

$\therefore$ (1) alone is sufficient to derive the answer.

Consider (2)

Given $\qquad a_4 = 256$

Then $\qquad a_4 = a_3^2 \Rightarrow a_3 = \sqrt{a_4} = \sqrt{256} = 16$

Also $\qquad a_3 = a_2^2$

$\Rightarrow \qquad a_2 = \sqrt{a_3} = \sqrt{16} = 4$

and $\qquad a_2 = a_1^2$

$\Rightarrow \qquad a_1 = \sqrt{a_2} = \sqrt{4} = 2$

Therefore

$a_1 = 2, \ a_2 = 4, \ a_3 = 16, \ a_4 = 256$

So 3 does not appear in the sequence.

Therefore (2) alone is sufficient to derive the answer.

75. (2)

(1) is not sufficient

Consider (2)

$$3x + 3y = 4$$
$$3(x+y) = 4$$
$$x+y = \frac{4}{3}$$

$\therefore$ (2) alone is sufficient to derive the answer.

76. (5)

(1) and (2) are not sufficient. We need more data.

77. (5)

We need more data.

78. (4)

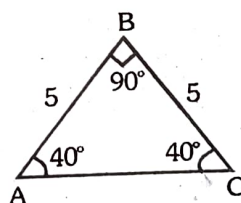(1) alone or (2) alone are sufficient.

79. (5)

(1) and (2) are not sufficient. We need more data.

80. (4)

Given AB=5, Y=40

Consider (1)

Since AB=BC=5

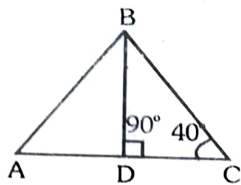$\Rightarrow \triangle ABC$ is an isosceles triangle.

$\therefore \qquad \lfloor BA\dot{C} = 40°$

$\therefore \qquad 40+40+ \lfloor ABC = 180°$

$\Rightarrow \qquad \lfloor ABC = 100°$

$\Rightarrow \qquad Z = 100°$

$\therefore$ (1) alone is sufficient.

Consider (2)

Let BD be the bisector.
Then by (2) BD$\perp$AC
In $\triangle$BDC

$\therefore$ $\quad$ $\underline{|}$DBC $+90+40$ $=$ 180

$\Rightarrow$ $\quad\quad\quad\quad$ $\underline{|}$DBE $=$ 50

$\quad\quad$ Z $=$ $2\underline{|}$DBE $=$ $100°$

So (2) alone is sufficient to derive the answer.

81. (5)

82. (3)
'was' instead of 'has been'

83. (4)
omit 'relates'

84. (4)
'becomes' instead of 'become'

85. (2)
'inroad into' instead of 'inroads into'

86. (3)
'already' instead of 'previously'

87. (3)
'regardless' instead of 'irregardless'

88. (1)
'advice' instead of 'advise'

89. (3)
'I are prepared' instead of 'I am prepared'

90. (3)
'he is' instead of 'they are'

91. (2)
'it be' instead of 'it can be'

92. (2)
'any' instead of 'no'

93. (4)
'myself' instead of 'me'

94. (1)
'was' instead of 'had been'

95. (4)
'given to him' instead of 'given him'.

96. (2)
omit 'had'

97. (4)
'who it is' instead of 'whose it is'.

98. (3)
'were allowed' instead of 'was allowed'.

99. (4)
'on time' instead of 'in time'.

100. (1)
'are' instead of 'were'.