CBSE 2022 Maths Standard (Term 2) — Set 1

English Medium

Time Allowed: 3 Hours | Maximum Marks: 80

General Instructions:

1. This question paper contains 38 questions. All questions are compulsory.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 6 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 case-study based questions carrying 4 marks each.
7. Draw neat figures wherever required.

Q.1(a) [1 mark]

Find the sum of first 30 terms of an A.P.: -30, -24, -18, ...

OR

Q.1 [1 mark]

In an A.P., if S_n = n(4n + 1), then find the A.P.

Section A

Multiple Choice Questions (1 mark each)

Q.2 [1 mark]

A solid metallic sphere of radius 10.5 cm is melted and recast into a number of smaller cones, each of radius 3.5 cm and height 3 cm. Find the number of cones so formed.

Q.3(a) [1 mark]

Find the value of m for which the quadratic equation (m - 1)x^2 + 2(m - 1)x + 1 = 0 has two real and equal roots.

OR

Q.3 [1 mark]

Solve the following quadratic equation for x: sqrt(3) * x^2 + 10x + 7 * sqrt(3) = 0

Q.4 [1 mark]

Find the mode of the following frequency distribution:

Class: 10-20, 20-30, 30-40, 40-50, 50-60

Frequency: 15, 10, 12, 17, 4

Q.5 [1 mark]

The product of Rehan's age (in years) 5 years ago and his age 7 years from now, is one more than twice his present age. Find his present age.

Q.6 [1 mark]

Two concentric circles are of radii 4 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

Q.7 [1 mark]

For what value of x is the median of the following frequency distribution 34.5?

Class: 0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70
Frequency: 3, 5, 11, 10, x, 3, 2

Q.9(a) [1 mark]

The angle of elevation of the top of a building from the foot of a tower is 30 degrees and the angle of elevation of the top of the tower from the foot of the building is 60 degrees. If the tower is 50 m high, find the height of the building.

OR

Q.9 [1 mark]

From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30 degrees and 45 degrees respectively. If the bridge is at a height of 3 m from the banks, find the width of the river.

Q.10 [1 mark]

Following is the daily expenditure on lunch by 30 employees of a company:

Daily Expenditure (in Rupees): 100-120, 120-140, 140-160, 160-180,

180-200
Number of Employees: 8, 3, 8, 6, 5

Find the mean daily expenditure of the employees.

Q.11(a) [1 mark]

From a solid cylinder of height 30 cm and radius 7 cm, a conical cavity of height 24 cm and same radius is hollowed out. Find the total surface area of the remaining solid.

OR

Q.11 [1 mark]

Water in a canal, 8 m wide and 6 m deep, is flowing with a speed of 12 km/hour. How much area will it irrigate in one hour, if 0.05 m of standing water is required?

Q.13(a) [1 mark]

(Case Study) Matchstick patterns are based on linear relations. In a pattern: Figure 1 has 4 triangles, Figure 2 has 6 triangles, Figure 3 has 8 triangles, and so on. Write the A.P. for the number of triangles used in the figures and find the nth term of this A.P.

Q.13(b) [1 mark]

(Case Study) Matchstick patterns are based on linear relations. In a pattern: Figure 1 uses 5 matchsticks, Figure 2 uses 9 matchsticks, Figure 3 uses 13 matchsticks (each figure uses 4 more matchsticks than the previous). Which figure has 61 matchsticks?

Q.14(b) [1 mark]

(Case Study) Gadisar Lake is in Jaisalmer, Rajasthan. From a point A above the water level, the angle of elevation of the top of a Chhatri (point B) is 45

degrees and the angle of depression of its reflection in water (point C) is 60 degrees. If the height of the Chhatri above water level is approximately 10 m, find the height (h) of point A above the water level. (Use sqrt(3) = 1.73)