CLASS VIII – MATHEMATICS

Chapter Test: Proportional Reasoning-1

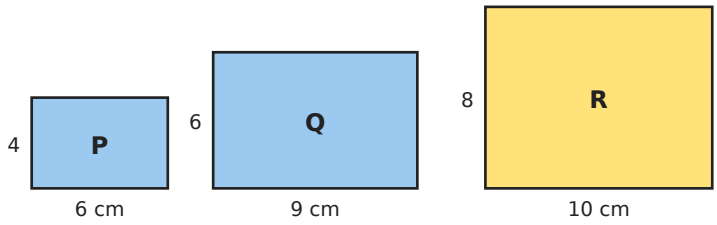
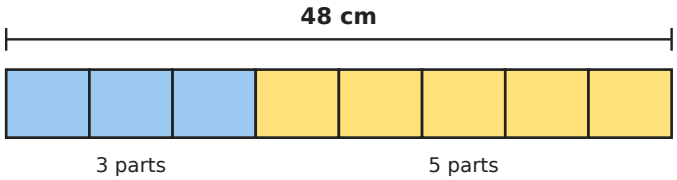
(Ganita Prakash, Grade 8, Part I – Chapter 7)

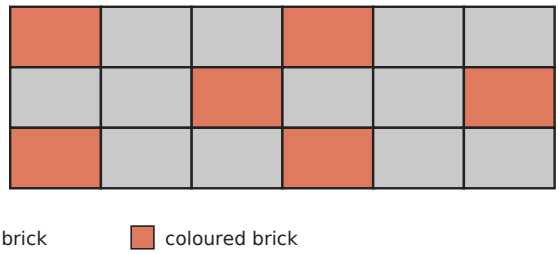
Time: 1½ Hours **M. M.: 40**

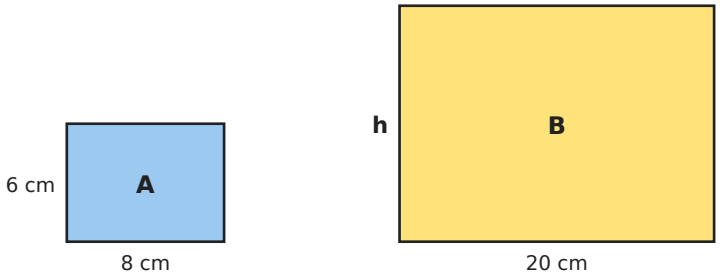
General Instructions:

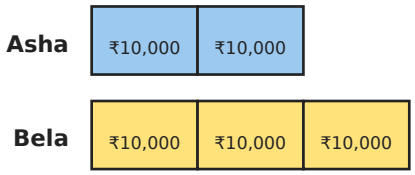
1. This paper contains 20 questions. All questions are compulsory.
2. This paper is divided into 4 sections: **A, B, C** and **D**.
3. In **Section A**, Questions no. 1 to 10 are Multiple Choice Questions carrying 1 mark each.
4. In **Section B**, Questions no. 11 to 13 are Very Short Answer type questions carrying 2 marks each.
5. In **Section C**, Questions no. 14 to 17 are Short Answer type questions carrying 3 marks each.
6. In **Section D**, Questions no. 18 to 20 are Long Answer / Case-based questions carrying 4 marks each.
7. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 3 questions of Section C and 2 questions of Section D.
8. Figures are only for reference and are not drawn to scale. Questions 9, 10, 11, 14 and 18 are figure-based.
9. Show all the steps of your working.
10. Use of calculator is **not** allowed.

Q. No.	Section – A	Marks
1	Which of the following is a true statement of proportion? (A) 6 : 9 :: 9 : 6 (B) 6 : 9 :: 10 : 15 (C) 6 : 9 :: 15 : 10 (D) 6 : 9 :: 12 : 15	**[1]**
2	The ratio 48 : 72 in its simplest form is (A) 3 : 2 (B) 2 : 3 (C) 4 : 6 (D) 6 : 9	**[1]**
3	If 5 : 8 :: x : 56, then x is (A) 30 (B) 35 (C) 40 (D) 45	**[1]**
4	The ratio of 250 mL to 2 litres in its simplest form is (A) 1 : 8 (B) 125 : 1 (C) 1 : 4 (D) 5 : 4	**[1]**
5	Using Fahrenheit = (9/5) × Celsius + 32, the temperature 30 °C is equal to (A) 62 °F (B) 76 °F (C) 86 °F (D) 98 °F	**[1]**
6	A mixture of 35 litres contains milk and water in the ratio 4 : 1. The quantity of water is (A) 7 litres (B) 8 litres (C) 28 litres (D) 5 litres	**[1]**
7	If 12 pens cost ₹90, then the cost of 20 pens at the same rate is (A) ₹120 (B) ₹150 (C) ₹160 (D) ₹180	**[1]**
8	If 1 is added to both terms of the ratio 3 : 5, the new ratio in simplest form is (A) 3 : 5 (B) 2 : 3 (C) 4 : 5 (D) 1 : 2	**[1]**

Q. No.	Section – A	Marks
9	In Fig. 1, which two rectangles are similar to each other?  Fig. 1: Three rectangles (lengths in cm) (A) P and Q (B) Q and R (C) P and R (D) All three	**[1]**
10	In Fig. 2, the ribbon of length 48 cm is cut into two pieces in the ratio 3 : 5. The length of the longer piece is  Fig. 2: A 48 cm ribbon cut in the ratio 3 : 5 (A) 18 cm (B) 24 cm (C) 30 cm (D) 32 cm	**[1]**

Q. No.	Section – B	Marks
11	Fig. 3 shows a small part of a long wall built with grey and coloured bricks. The same pattern is repeated all through the wall.  (i) Write the ratio of grey bricks to coloured bricks in its simplest form. [1] (ii) How many coloured bricks will there be in a part of this wall that has 90 bricks? [1]	**[2]**
12	(A) Are the ratios 12 : 16 and 27 : 36 proportional? Write each in its simplest form and justify. **OR** (B) Find the value of x if 9 : x :: 15 : 25.	**[2]**
13	Pranav mixes 750 mL of orange juice with 1.2 litres of apple juice. Find the ratio of orange juice to apple juice in its simplest form.	**[2]**

Q. No.	Section – C	Marks
14	Fig. 4 shows rectangle A of width 8 cm and height 6 cm. A larger rectangle B of width 20 cm is to have the same shape as A.  Fig. 4: Rectangle A and a larger rectangle B (not to scale) (i) Find the ratio of width to height of A in its simplest form. [1] (ii) Find the height h of rectangle B. [1] (iii) Is a rectangle of width 15 cm and height 12 cm similar to A? Give a reason. [1]	**[3]**
15	(A) Divide ₹9,000 between Asha and Bina in the ratio 4 : 5. **OR** (B) A car travels 156 km on 12 litres of petrol. How far will it travel on 20 litres? How much petrol is needed for 390 km? (Same rate of consumption.)	**[3]**
16	(A) Using Fahrenheit = (9/5) × Celsius + 32 and Celsius = (5/9) × (Fahrenheit − 32), convert 35 °C to °F and 104 °F to °C. **OR** (B) A shop sells 500 g of rice for ₹65 and 2 kg of the same rice for ₹240. Which is the better buy? Show your working.	**[3]**
17	(A) Aarav is 6 years old and his uncle is 30 years old. (i) Write the ratio of Aarav's age to his uncle's age in simplest form. [1] (ii) Find the ratio of their ages after 4 years. [1] (iii) Is the new ratio the same as the old one? Explain why adding the same number to both terms changes the ratio. [1] **OR** (B) A 20-litre bucket of orange paint is made by mixing red and yellow paints in the ratio 2 : 3. Another bucket of 20 litres of yellow paint is added to it. Find the ratio of red paint to yellow paint in the new mixture.	**[3]**

Q. No.	Section – D	Marks
18	(A) Asha and Bela start a small business with the investments shown in Fig. 5, where each block stands for ₹10,000. They agree to share the profit in the ratio of their investments. At the end of the year the profit is ₹7,500.  Fig. 5: Investments of Asha and Bela (i) Find the ratio of their investments in simplest form. [1] (ii) Into how many equal parts is the profit divided, and what is the value of one part? [1] (iii) Find the share of each. [1] (iv) If Bela had invested ₹10,000 more, what would her share of the same ₹7,500 be? [1] **OR** (B) A 60 kg mixture contains sand and cement in the ratio 3 : 2. (i) Find the weight of sand and of cement in it. [2] (ii) How much cement must be added so that the ratio of sand to cement becomes 6 : 5? [2]	**[4]**
19	(A) A farmer has a rectangular plot 60 m long and 40 m wide. Fertiliser is to be applied at 150 kg per hectare. (1 hectare = 10,000 square metres) (i) Find the area of the plot in square metres. [1] (ii) Express the area in hectares. [1] (iii) How much fertiliser is needed? [1] (iv) Find its cost if fertiliser costs ₹24 per kg. [1] **OR** (B) A drink is made by mixing concentrate and water in the ratio 1 : 4. (i) How much concentrate and how much water are there in 750 mL of the drink? [2] (ii) How much water must be added to this 750 mL so that the ratio of concentrate to water becomes 1 : 5? [2]	**[4]**
20	**Case Study:** For the Annual Day backdrop, students make green paint by mixing blue and yellow paints in the ratio 2 : 3. (i) How much blue and how much yellow paint are needed to make 40 mL of green paint? [1] (ii) To make a lighter shade, Rani adds 6 mL of yellow paint to the 40 mL of green paint. Find the new ratio of blue to yellow in simplest form. [1] (iii) How much yellow paint is needed to make 2.5 litres of the original green paint? [1] (iv) Blue paint costs ₹300 per litre and yellow paint costs ₹200 per litre. Find the cost of the paint for 2.5 litres of the original green paint. [1]	**[4]**

— End of Question Paper —