

Educational Worksheet

Answer Key: Ratio and Direct Proportion Problems

Grade 7 Mathematics - Medium Difficulty

Total Marks: 40

Section A: Simplifying Ratios

1. $12 : 18 = \underline{2 : 3}$

2. $15 : 25 = \underline{3 : 5}$

3. $24 : 36 : 48 = \underline{2 : 3 : 4}$

4. $20 : 35 = \underline{4 : 7}$

5. $16 : 24 : 32 = \underline{2 : 3 : 4}$

6. $45 : 60 = \underline{3 : 4}$

7. $21 : 28 : 35 = \underline{3 : 4 : 5}$

8. $72 : 108 = \underline{2 : 3}$

Section B: Equivalent Ratios

9. $3 : 5 = 12 : \underline{20}$

10. $2 : 7 = \underline{6} : 21$

11. $4 : 9 = 20 : \underline{45}$

12. $5 : 8 = \underline{20} : 32$

14. $7 : 10 = \underline{35} : 50$

Section C: Sharing in Given Ratios

15. Total parts = 8; $\pounds 240 \div 8 = \pounds 30$; **$\pounds 90 : \pounds 150$**

16. Total parts = 12; $72 \div 12 = 6$; **$30 : 42$**

17. Total parts = 10; $150 \div 10 = 15$; **$30 \text{ cm} : 45 \text{ cm} : 75 \text{ cm}$**

18. Total parts = 14; $\pounds 420 \div 14 = \pounds 30$; **$\pounds 120 : \pounds 90 : \pounds 210$**

19. Total parts = 8; $96 \div 8 = 12$; **$60 : 36$**

20. Total parts = 14; $210 \div 14 = 15$; **$30 \text{ min} : 45 \text{ min} : 60 \text{ min} : 75 \text{ min}$**

21. Total parts = 12; $180 \div 12 = 15$; **$105 \text{ kg} : 75 \text{ kg}$**

22. Total parts = 15; $\pounds 675 \div 15 = \pounds 45$; **$\pounds 135 : \pounds 180 : \pounds 360$**

23. Total parts = 9; $144 \div 9 = 16$; **$16 : 48 : 80$**

24. Total parts = 7; $280 \div 7 = 40$; **$120 \text{ ml} : 160 \text{ ml}$**

Section D: Direct Proportion

25. $\pounds 3 \div 5 \times 8 = \underline{\pounds 4.80}$

26. $2.4 \div 12 \times 20 = \underline{4 \text{ kg}}$

27. $6 \times 15 \div 10 = \underline{9 \text{ days}}$

28. $\pounds 18 \div 4 \times 7 = \underline{\pounds 31.50}$

29. $2.7 \div 9 \times 15 = \underline{4.5 \text{ kg}}$

30. $120 \div 8 \times 195 \div 120 = \underline{13 \text{ tins}}$

32. $180 \div 2.5 \times 4 = \underline{288 \text{ km}}$

Section E: Real-World Applications

33. Flour: 450g, Sugar: 300g, Butter: 225g

34. Red paint: 12 litres, Total: 20 litres

35. Total parts = 9; Boys: $4 \times 80 = \underline{320}$; Girls: $5 \times 80 = \underline{400}$

36. Distance: 750 km, Time: 4 hours

37. \$119, €72, £150

38. Total parts = 9; £4,000 : £6,000 : £8,000

39. 1:250,000, Real distance: 30 km

40. Brazilian: 16 kg, Ethiopian: 8 kg, Total: 48 kg

Teaching Notes

Common Mistakes to Watch For:

- **Ratio Simplification**: Not reducing ratios to lowest terms
- **Total Parts**: Forgetting to add all ratio parts together
- **Direction of Proportion**: Confusing which values increase/decrease together
- **Units**: Mixing different units in ratio calculations

Extension Activities:

- Research ratios in cooking recipes from different countries

• Calculate gear ratios in bicycles or cars

- Create scale models using ratio calculations

Assessment Criteria:

- **Excellent (36-40 marks)**: Confident with all ratio and proportion concepts
 - **Good (30-35 marks)**: Mostly accurate, minor calculation errors
 - **Satisfactory (24-29 marks)**: Basic understanding, some ratio simplification issues
 - **Needs Support (<24 marks)**: Requires additional practice with ratio concepts
-

This answer key corresponds to: ratio-proportion-problems.md