Educational Worksheet

Answer Key: Ratio and Direct Proportion Problems

Grade 7 Mathematics - Medium Difficulty
Total Marks: 40

Section A: Simplifying Ratios

1. 12 : 18 = **2 : 3**

2. 15 : 25 = **3 : 5**

3. 24 : 36 : 48 = **2 : 3 : 4**

4. 20 : 35 = **4 : 7**

5. 16 : 24 : 32 = **2 : 3 : 4**

6. 45 : 60 = **3 : 4**

7. 21 : 28 : 35 = **3 : 4 : 5**

8. 72 : 108 = **2 : 3**

Section B: Equivalent Ratios

9. 3 : 5 = 12 : **20**

10. 2 : 7 = **6** : 21

11. 4 : 9 = 20 : **45**

12. 5 : 8 = **20** : 32

13. 6 : 11 = 18 : **33**

14. 7 : 10 = **35** : 50

Section C: Sharing in Given Ratios

15. Total parts = 8; £240 ÷ 8 = £30; **£90 : £150**

16. Total parts = 12; 72 ÷ 12 = 6; **30 : 42**

17. Total parts = 10; 150 ÷ 10 = 15; **30 cm : 45 cm : 75 cm**

18. Total parts = 14; £420 ÷ 14 = £30; **£120 : £90 : £210**

19. Total parts = 8; 96 ÷ 8 = 12; **60 : 36**

20. Total parts = 14; 210 ÷ 14 = 15; **30 min : 45 min : 60 min : 75 min**

21. Total parts = 12; 180 ÷ 12 = 15; **105 kg : 75 kg**

22. Total parts = 15; £675 ÷ 15 = £45; **£135 : £180 : £360**

23. Total parts = 9; 144 ÷ 9 = 16; **16 : 48 : 80**

24. Total parts = 7; 280 ÷ 7 = 40; **120 ml : 160 ml**

Section D: Direct Proportion

25. £3 ÷ 5 × 8 = **£4.80**

26. 2.4 ÷ 12 × 20 = **4 kg**

27. 6 × 15 ÷ 10 = **9 days**

28. £18 ÷ 4 × 7 = **£31.50**

29. 2.7 ÷ 9 × 15 = **4.5 kg**

30. 120 ÷ 8 × 195 ÷ 120 = **13 tins**

31. $60 ÷ £45 × £75 = **$100**

32. 180 ÷ 2.5 × 4 = **288 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 × 80 = **320**; Girls: 5 × 80 = **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
- Explore golden ratio in art and nature
- 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