

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; $£240 \div 8 = £30$; **£90 : £150**
16. Total parts = 12; $72 \div 12 = 6$; **30 : 42**
17. Total parts = 10; $150 \div 10 = 15$; **30 cm : 45 cm : 75 cm**
18. Total parts = 14; $£420 \div 14 = £30$; **£120 : £90 : £210**
19. Total parts = 8; $96 \div 8 = 12$; **60 : 36**
20. Total parts = 14; $210 \div 14 = 15$; **30 min : 45 min : 60 min : 75 min**
21. Total parts = 12; $180 \div 12 = 15$; **105 kg : 75 kg**
22. Total parts = 15; $£675 \div 15 = £45$; **£135 : £180 : £360**
23. Total parts = 9; $144 \div 9 = 16$; **16 : 48 : 80**
24. Total parts = 7; $280 \div 7 = 40$; **120 ml : 160 ml**

Section D: Direct Proportion

25. $£3 \div 5 \times 8 = £4.80$
26. $2.4 \div 12 \times 20 = 4 \text{ kg}$
27. $6 \times 15 \div 10 = 9 \text{ days}$

29. $2.7 \div 9 \times 15 = 4.5$ kg
30. $120 \div 8 \times 195 \div 120 = 13$ tins
31. $\$60 \div \pounds45 \times \pounds75 = \100
32. $180 \div 2.5 \times 4 = 288$ 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: $4 \times 80 = 320$; Girls: $5 \times 80 = 400$
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**
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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
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This answer key corresponds to: ratio-proportion-problems.md