

Educational Material

Answer Key: Map Scale Problems

Grade 7 Mathematics - Medium Difficulty

Total Marks: 40

Section A: Understanding Scale

1. 1 cm = **50,000 cm** = **500 m** = **0.5 km**
2. **1:25,000** shows more detail (smaller scale number = more detail)
3. 1 cm : 2 km = **1:200,000**; 1 cm : 500 m = **1:50,000**; 2 cm : 1 km = **1:50,000**

Section B: Map Distance to Real Distance

4. $5 \times 20,000 = \mathbf{100,000\text{ cm} = 1,000\text{ m}}$
5. $3.5 \times 50,000 = 175,000\text{ cm} = \mathbf{1.75\text{ km}}$
6. $8 \times 25,000 = \mathbf{200,000\text{ cm} = 2,000\text{ m}}$
7. $2.4 \times 100,000 = 240,000\text{ cm} = \mathbf{2.4\text{ km}}$
8. $12.5 \times 10,000 = \mathbf{125,000\text{ cm} = 1,250\text{ m}}$
9. $6.8 \times 75,000 = 510,000\text{ cm} = \mathbf{5.1\text{ km}}$
10. $4.5 \times 200,000 = 900,000\text{ cm} = \mathbf{9\text{ km}}$
11. $9.2 \times 15,000 = \mathbf{138,000\text{ cm} = 1,380\text{ m}}$

Section C: Real Distance to Map Distance

12. $1.5\text{ km} = 150,000\text{ cm} \div 30,000 = \mathbf{5\text{ cm}}$
13. $800\text{ m} = 80,000\text{ cm} \div 40,000 = \mathbf{2\text{ cm}}$
14. $2.5\text{ km} = 250,000\text{ cm} \div 25,000 = \mathbf{10\text{ cm}}$
15. $1,200\text{ m} = 120,000\text{ cm} \div 60,000 = \mathbf{2\text{ cm}}$
16. $3.2\text{ km} = 320,000\text{ cm} \div 80,000 = \mathbf{4\text{ cm}}$
17. $750\text{ m} = 75,000\text{ cm} \div 50,000 = \mathbf{1.5\text{ cm}}$
18. $1.75\text{ km} = 175,000\text{ cm} \div 35,000 = \mathbf{5\text{ cm}}$
19. $900\text{ m} = 90,000\text{ cm} \div 45,000 = \mathbf{2\text{ cm}}$

Section D: Scale Drawing Problems

20. $24 \text{ m} = 2,400 \text{ cm} \div 200 = \mathbf{12 \text{ cm}}$
 21. $8 \text{ cm} \times 500 = 4,000 \text{ cm} = \mathbf{40 \text{ m}}$; $6 \text{ cm} \times 500 = 3,000 \text{ cm} = \mathbf{30 \text{ m}}$
 22. $4.8 \text{ m} = 480 \text{ cm} \div 32 = \mathbf{15 \text{ cm}}$
 23. $5.5 \text{ m} \div 100 = \mathbf{5.5 \text{ cm}}$; $4.2 \text{ m} \div 100 = \mathbf{4.2 \text{ cm}}$

Section E: Real-World Applications

24. $14 \times 25,000 = 350,000 \text{ cm} = \mathbf{3.5 \text{ km}}$; Time = $3.5 \div 4 = \mathbf{52 \text{ minutes } 30 \text{ seconds}}$
 25. $23 \times 10,000 = 230,000 \text{ cm} = \mathbf{2.3 \text{ km}}$; Cost = $2.3 \times \text{£}50,000 = \mathbf{\text{£}115,000}$
 26. $(15 + 8) \times 2,000 = 23 \times 2,000 = \mathbf{46,000 \text{ cm} = 460 \text{ m}}$
 27. Real distance = $6 \times 50,000 = 300,000 \text{ cm}$; On Map 2: $300,000 \div 100,000 = \mathbf{3 \text{ cm}}$
 28. Scale 1:5,000: $150\text{m} = 15,000\text{cm} \div 5,000 = \mathbf{3 \text{ cm}}$; $80\text{m} = 8,000\text{cm} \div 5,000 = \mathbf{1.6 \text{ cm}}$
 Scale 1:2,000: $15,000 \div 2,000 = \mathbf{7.5 \text{ cm}}$; $8,000 \div 2,000 = \mathbf{4 \text{ cm}}$
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Teaching Notes

Common Mistakes to Watch For:

- **Unit Conversion:** Confusing cm, m, and km conversions
- **Scale Direction:** Mixing up map distance with real distance
- **Multiplication vs Division:** Using wrong operation for the conversion
- **Decimal Places:** Rounding errors in calculations

Extension Activities:

- Create scale drawings of the school playground
- Use online maps to practice measuring real distances
- Design a treasure map with accurate scale
- Compare different map scales of the same area

Assessment Criteria:

- **Excellent (36-40 marks):** Confident with scale conversions and applications
 - **Good (30-35 marks):** Mostly accurate with minor unit conversion errors
 - **Satisfactory (24-29 marks):** Basic understanding, some calculation mistakes
 - **Needs Support (<24 marks):** Requires additional practice with scale concepts
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This answer key corresponds to: map-scale-problems.md