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## Educational Worksheet

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### Answer Key: Map Scale Problems

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**Grade 7 Mathematics - Medium Difficulty**

**Total Marks: 40**

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#### Section A: Understanding Scale

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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

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

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12.  $1.5 \text{ km} = 150,000 \text{ cm} \div 30,000 = \underline{5 \text{ cm}}$

13.  $800 \text{ m} = 80,000 \text{ cm} \div 40,000 = \underline{2 \text{ cm}}$

14.  $2.5 \text{ km} = 250,000 \text{ cm} \div 25,000 = \underline{10 \text{ cm}}$

15.  $1,200 \text{ m} = 120,000 \text{ cm} \div 60,000 = \underline{2 \text{ cm}}$

16.  $3.2 \text{ km} = 320,000 \text{ cm} \div 80,000 = \underline{4 \text{ cm}}$

17.  $750 \text{ m} = 75,000 \text{ cm} \div 50,000 = \underline{1.5 \text{ cm}}$

18.  $1.75 \text{ km} = 175,000 \text{ cm} \div 35,000 = \underline{5 \text{ cm}}$

19.  $900 \text{ m} = 90,000 \text{ cm} \div 45,000 = \underline{2 \text{ cm}}$

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## Section D: Scale Drawing Problems

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20.  $24 \text{ m} = 2,400 \text{ cm} \div 200 = \underline{12 \text{ cm}}$

21.  $8 \text{ cm} \times 500 = 4,000 \text{ cm} = \underline{40 \text{ m}}$ ;  $6 \text{ cm} \times 500 = 3,000 \text{ cm} = \underline{30 \text{ m}}$

22.  $4.8 \text{ m} = 480 \text{ cm} \div 32 = \underline{15 \text{ cm}}$

23.  $5.5 \text{ m} \div 100 = \underline{5.5 \text{ cm}}$ ;  $4.2 \text{ m} \div 100 = \underline{4.2 \text{ cm}}$

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## Section E: Real-World Applications

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24.  $14 \times 25,000 = 350,000 \text{ cm} = \underline{3.5 \text{ km}}$ ; Time =  $3.5 \div 4 = \underline{52 \text{ minutes } 30 \text{ seconds}}$

25.  $23 \times 10,000 = 230,000 \text{ cm} = \underline{2.3 \text{ km}}$ ; Cost =  $2.3 \times \text{£}50,000 = \underline{\text{£}115,000}$

26.  $(15 + 8) \times 2,000 = 23 \times 2,000 = \underline{46,000 \text{ cm}} = \underline{460 \text{ m}}$

27. Real distance =  $6 \times 50,000 = 300,000 \text{ cm}$ ; On Map 2:  $300,000 \div 100,000 = \underline{3 \text{ cm}}$

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28. Scale 1:5,000:  $150\text{m} = 15,000\text{cm} \div 5,000 = \underline{\mathbf{3\text{ cm}}}$ ;  $80\text{m} = 8,000\text{cm} \div 5,000 = \underline{\mathbf{1.6\text{ cm}}}$  Scale  
1:2,000:  $15,000 \div 2,000 = \underline{\mathbf{7.5\text{ cm}}}$ ;  $8,000 \div 2,000 = \underline{\mathbf{4\text{ cm}}}$

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## Teaching Notes

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### 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*

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