

# Educational Worksheet

## Answer Key: Map Scale Problems

Grade 7 Mathematics - Medium Difficulty

Total Marks: 40

---

### Section A: Understanding Scale

- 1 cm = **50,000 cm** = **500 m** = **0.5 km**
- 1:25,000** shows more detail (smaller scale number = more detail)
- 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

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

### Section C: Real Distance to Map Distance

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

### Section D: Scale Drawing Problems

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

### Section E: Real-World Applications

- $24 \times 14 = 336,000$ ;  $336,000 \div 250,000 = 1.344$ ;  $1.344 \times 50 = \mathbf{67.2 \text{ km}}$
- $2.5 \times 10,000 = 250,000 \text{ cm} = \mathbf{2.5 \text{ km}}$ ;  $\text{Cost} = 2.5 \times \pounds 50,000 = \mathbf{\pounds 125,000}$

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:  $15,000 \div 2,000 = \mathbf{7.5 \text{ cm}}$ ;  $8,000 \div 2,000 = \mathbf{4 \text{ cm}}$

---

## 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
- 

*This answer key corresponds to: map-scale-problems.md*