

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

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

Section C: Real Distance to Map Distance

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

Section D: Scale Drawing Problems

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

Section E: Real-World Applications

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: $300,000 \div 100,000 = \underline{3 \text{ cm}}$

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