4.19 Bearings and Scale: Test Pack

Calculators not allowed · about 55 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Give the three-figure bearing of the direction shown: from point X to point Y is directly east.

(1)

2 A student measures the bearing from X to Y as 215 on a sketch. The protractor reading might be 214, 215 or 216 due to small error. State the bearing to the nearest degree and explain whether this uncertainty affects the three-figure bearing.

(2)

3 On a map with scale 1:100 000, two landmarks are 2.2 km apart in reality. Find the distance between them on the map in centimetres. Show the conversion steps.

(3)

4 A town P is due north of town Q. A car drives from Q on a bearing of 035 and another car drives from Q on a bearing of 130. Which car is closer in direction to P? Justify your answer with a calculation.

(2)

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5 A scale drawing uses scale 1:5000. A river runs in a straight line on the drawing from point R to point S measuring 14.6 cm. A bridge is built 1.8 km downstream from S along the same river. Calculate the position of the bridge on the drawing in centimetres measured from R. Show your working clearly.

(4)

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6 A plan of a room uses a scale of 1 : 20. The room is 3.6 m long in real life. How long is the room on the plan? Give your answer in centimetres.

(2)

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7 A scale drawing uses a scale of 1 cm to 4 m. A building is 24 m tall. How tall is the building on the drawing?

(2)

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8 Write down the three-figure bearing of West.

(1)

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9 The bearing of B from A is 243°. Work out the bearing of A from B.

(2)

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10 The bearing of B from A is 059°. The bearing of C from B is 345°. Work out the size of angle ABC.

(3)

11 A plane flies from airport S to airport T on a bearing of 072. Another plane flies from T to U on a bearing of 242. Are these two bearings reciprocals? Explain briefly.

(2)

12 The bearing of B from A is 013°. The bearing of C from B is 206°. Work out the size of angle ABC.

(3)

13 A ship sails from port P on a bearing of 056°. It then turns and sails directly back to P. On what bearing does it sail on the return journey? Give your answer as a three-figure bearing.

(2)

14 A scale drawing uses a scale of 5 cm to 20 m. Write the scale in the form 1 : n.

(3)

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15 The bearing of B from A is 090°. The bearing of C from B is 210°. Work out the size of angle ABC.

(3)

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16 A walker is facing South West and turns clockwise through 90°. In which direction is the walker now facing? Give the compass direction.

(2)

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17 Give the three-figure bearing of the direction shown: from point J to point K is directly north.

(1)

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18 A scale drawing uses scale 1:8000. A river runs in a straight line on the drawing from point R to point S measuring 11.4 cm. A bridge is built 2.4 km downstream from S along the same river. Calculate the position of the bridge on the drawing in centimetres measured from R. Show your working clearly.

(4)

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19 On a scale drawing 1 cm represents 400 m. Calculate the drawing length in centimetres for a real distance of 3.6 km.

(2)

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Mark scheme · 4.19 Bearings and Scale: Test Pack

Question 1

090 cao — **B1**

Answer: **090**

Question 2

states nearest degree as 215 — **M1**

explains three-figure bearing still 215 because rounding to nearest degree gives 215 and three figures include leading zero if needed — **A1**

Answer: **215; No change, the three-figure bearing is 215**

Question 3

converts 2.2 km to cm: 2.2 x 1000 = 2200 m then x100 = 220 000 cm or directly 2.2 x 100 000 = 220 000 cm — **M1**

divides by scale 100 000 to get map cm: 220 000 / 100 000 = 2.2 — **M1**

2.2 cm cao — **A1**

Answer: **2.2 cm**

Question 4

computes differences from north (000): |035 - 000| = 35 and |130 - 000| = 130 or uses smallest angle to north — **M1**

car on 035 is closer to P because 35 degrees < 130 degrees — **A1**

Answer: **The car on 035; 35 degrees from north compared with 130 degrees**

Question 5

converts 1.8 km to cm: 1.8 x 1000 = 1800 m then x100 = 180 000 cm — **M1**

divides by scale 5000 to get map cm for downstream distance: 180 000 / 5000 = 36 — **M1**

adds this to distance RS on drawing: 14.6 + 36 = 50.6 cm — **M1**

50.6 cm cao — **A1**

Answer: **50.6 cm**

Question 6

3.6 x 100 = 360 cm, then ÷ 20 — **M1**

18 cm cao — **A1**

Answer: **18 cm**

Question 7

24 ÷ 4 x 1 — **M1**

6 cm cao — **A1**

Answer: **6 cm**

Question 8

270° cao — **B1**

Answer: **270°**

Question 9

243 - 180 — **M1**

063° cao — **A1**

Answer: **063°**

Question 10

bearing of A from B = 239° — **M1**

difference between 239 and 345 (and a reflex angle converted if needed) — **M1**

106° cao — **A1**

Answer: **106°**

Question 11

shows method: adds or subtracts 180 to 072 gives 252 (or 072+180=252) or compares 242 — **M1**

statement that they are not reciprocals because reciprocal of 072 is 252, not 242 — **A1**

Answer: **No; reciprocal of 072 is 252, not 242**

Question 12

bearing of A from B = 193° — **M1**

difference between 193 and 206 (and a reflex angle converted if needed) — **M1**

13° cao — **A1**

Answer: **13°**

Question 13

56 + 180 — **M1**

236° cao — **A1**

Answer: **236°**

Question 14

20 m = 2000 cm — **M1**

2000 ÷ 5 — **M1**

1 : 400 cao — **A1**

Answer: **1 : 400**

Question 15

bearing of A from B = 270° — **M1**

difference between 270 and 210 (and a reflex angle converted if needed) — **M1**

60° cao — **A1**

Answer: **60°**

Question 16

225 + 90 = 315 (mod 360) — **M1**

North West cao — **A1**

Answer: **North West**

Question 17

000 cao — **B1**

Answer: **000**

Question 18

converts 2.4 km to cm: 2.4 x 100 000 = 240 000 cm — **M1**

divides by scale 8000 to get map cm for downstream distance: 240 000 / 8000 = 30 — **M1**

adds this to distance RS on drawing: 11.4 + 30 = 41.4 cm — **M1**

41.4 cm cao — **A1**

Answer: **41.4 cm**

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Question 19

converts 3.6 km to metres 3600 m and divides by 400 to find 9 cm **M1**

9 cm cao **A1**

Answer: **9 cm**

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