4.6 Measuring, Drawing and Constructing: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Can a triangle be drawn with sides 5 cm, 4 cm and 7 cm? Give a reason for your answer.

(2)

2 Write down the name of a 3-sided polygon and state how many degrees the interior angles add to.

(1)

3 Can a triangle be drawn with sides 4 cm, 4 cm and 10 cm? Give a reason for your answer.

(2)

4 The line AB is 3 cm long. A point is always exactly 3 cm from the line AB (on both sides) and no closer. Describe the shape of the locus.

(2)

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5 A dog is tied to a post on a flat field by a rope 4 m long. Describe the shape of the region where the dog can go, and state its radius.

(2)

6 A map has a scale of 1 : 5000. Two towns are 2.3 cm apart on the map. Work out the real distance between the towns. Give your answer in m.

(2)

7 The points A and B are 6 cm apart. A point P is the same distance from A and from B. Describe the line on which P must lie and state how far it crosses AB from A.

(2)

8 A map has a scale of 1 : 100000. A path is 2000 m long in real life. How long is it on the map in centimetres?

(3)

9 Maya measures an angle with a protractor. One arm of the angle passes through the 37° mark and the other arm passes through the 131° mark on the same scale. Work out the size of the angle.

(2)

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10 Construct the perpendicular bisector of a line segment PQ of length 8 cm. State the length of the two equal parts of PQ after construction.

(2)

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11 Triangle DEF has sides DE = 5 cm, EF = 6 cm and DF = 7 cm. Use compasses and ruler to construct triangle DEF. Explain why the construction is possible from these three lengths.

(3)

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12 A line segment AB has length 14 cm. Its perpendicular bisector is constructed. State the distance from the midpoint of AB to point B.

(1)

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Mark scheme · 4.6 Measuring, Drawing and Constructing: 30-minute Pack

Question 1

adds the two shorter sides and compares with the longest	M1
Yes, with the correct comparison	A1

Answer: **Yes**

Question 2

Triangle; interior angles add to 180 degrees cao	B1

Answer: **Triangle; 180 degrees**

Question 3

adds the two shorter sides and compares with the longest	M1
No, with the correct comparison	A1

Answer: **No**

Question 4

a rectangle-like shape with semicircular ends (a stadium shape)	B1
straight sides parallel to AB at distance 3 cm	B1

Answer: **A shape with two parallel straight sides 3 cm from AB and a semicircle of radius 3 cm at each end**

Question 5

circle	B1
radius 4 m	B1

Answer: **A circle (or the inside of a circle) with radius 4 m**

Question 6

2.3 x 5000	M1
115 m cao	A1

Answer: **115 m**

Question 7

perpendicular bisector of AB	B1
3 cm from A	B1

Answer: **The perpendicular bisector of AB, crossing AB 3 cm from A**

Question 8

2000 x 100 = 200000 cm	M1
÷ 100000	M1
2 cm cao	A1

Answer: **2 cm**

Question 9

131 - 37	M1
94° cao	A1

Answer: **94°**

Question 10

correct construction method indicated: arcs from P and Q with same radius, join intersections to get perpendicular bisector	M1
each part is 4 cm cao	A1

Answer: **4 cm and 4 cm**

Question 11

correct construction method: draw one side, then arcs of given radii from endpoints to locate third point	M1
identifies triangle inequality check or equivalent method: largest side $7 < 5 + 6 = 11$	M1
valid explanation that since $7 < 5 + 6$ the triangle inequality holds so the lengths make a triangle cao	A1

Answer: **Construction shown; because $7 < 5 + 6$ the triangle inequality holds so the lengths make a triangle**

Question 12

7 cm cao	B1

Answer: **7 cm**

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