# 8.2 Geometry: Properties of Shapes and Angles: 2-hour Pack

NCETM National Curriculum (2014) Mathematics - KS2 Geometry: Properties of Shapes · Calculators not allowed · about 120 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** Three corners of a rectangle are (-2, -2), (2, -2) and (2, 4). The sides are parallel to the axes.

What are the coordinates of the fourth corner?

Answer: (___, ___)

**(2)**

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**2** At 9 o'clock, what is the smaller angle between the hour hand and the minute hand?

Answer: ___ degrees

**(2)**

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**3** Four angles meet at a point and add up to 360 degrees. Three of the angles are 108, 90 and 88 degrees.

What is the fourth angle?

Answer: ___ degrees

**(2)**


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**4** How many faces does a hexagonal-based pyramid have?

Answer: ___

**(2)**

---

**5** How many lines of symmetry does a rectangle have?

Answer: ___

**(1)**

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**6** The minute hand of a clock turns clockwise from 12 to the number 4.

Through how many degrees has it turned?

Answer: ___ degrees

**(2)**

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**7** A circle has a diameter of 64 cm. What is its radius?

Answer: ___ cm

**(1)**


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**8** A shape has vertices A(2, 6), B(4, 3), C(2, 5). It is translated 3 units right and 4 units up.

Write the coordinates of the translated vertices in the same order.

Answer: ___

**(2)**

---

**9** How many sides does a hexagon have?

Answer: ___

**(1)**

---

**10** Three corners of a rectangle are (-1, -6), (5, -6) and (5, 0). The sides are parallel to the axes.

What are the coordinates of the fourth corner?

Answer: (___, ___)

**(2)**

---

**11** How many vertices does an octagonal-based pyramid have?

Answer: ___

**(2)**


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**12** How many lines of symmetry does a kite have?

Answer: ___

**(1)**

---

**13** How many faces does a square-based pyramid have?

Answer: ___

**(2)**

---

**14** How many vertices does a prism with a hexagonal cross-section (6 sides) have?

Answer: ___

**(2)**

---

**15** How many triangles can you make by drawing lines from one corner of a decagon to every other corner it is not already joined to?

Answer: ___

**(2)**

---

**16** Two angles lie on a straight line. One of the angles is 118 degrees. Work out the size of the other angle.

**(2)**


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**17** An angle on a diagram is 145 degrees. What is the size of the angle needed to complete a full turn?

Answer: ___ degrees

**(1)**

---

**18** A shape has vertices A(6, 2), B(4, 2), C(0, 2). It is translated 1 unit right and 4 units up.

Write the coordinates of the translated vertices in the same order.

Answer: ___

**(2)**

---

**19** How many edges does a triangular-based pyramid have?

Answer: ___

**(1)**

---

**20** An angle measures 298 degrees. Is it acute, obtuse or reflex?

Answer: ___

**(1)**


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**21** A line joins (-3, 5) and (1, 5).

What are the coordinates of the midpoint of the line?

Answer: (___, ___)

**(2)**

---

**22** Angles on a straight line add up to 180 degrees. Two angles on a straight line are 33 degrees and 97 degrees. A third angle fills the rest of the line.

What is the third angle?

Answer: ___ degrees

**(2)**

---

**23** Three angles meet at a point. Two of the angles are 95 degrees and 140 degrees. Work out the size of the third angle.

**(2)**

---

**24** How many faces does an octagonal-based pyramid have?

Answer: ___

**(1)**


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**25** Angles on a straight line add up to 180 degrees. Two angles on a straight line are 29 degrees and 111 degrees. A third angle fills the rest of the line.

What is the third angle?

Answer: ___ degrees

**(2)**

---

**26** A circle has a radius of 16 cm. What is its diameter?

Answer: ___ cm

**(1)**

---

**27** Point A is at (6, 8). It is translated by the vector (3, 1), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

**(2)**

---

**28** Two angles in a triangle are 48 degrees and 53 degrees.

What is the third angle?

Answer: ___ degrees

**(2)**


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**29** How many edges does a prism with a pentagonal cross-section (5 sides) have?

Answer: ___

**(2)**

---

**30** 2 identical circles are drawn in a straight row, touching each other. Each circle has a radius of 2 cm.

How long is the whole row?

Answer: ___ cm

**(2)**

---

**31** I am a quadrilateral. I have 4 lines of symmetry and 4 right angles.

What shape am I?

Answer: ___

**(1)**

---

**32** The three angles inside a triangle are 48 degrees, 67 degrees and x degrees. Work out the value of x.

**(2)**


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**33** Two angles in a triangle are 53 degrees and 32 degrees.

What is the third angle?

Answer: ___ degrees

**(2)**

---

**34** A shape has vertices A(0, 1), B(1, 2), C(6, 6), D(1, 6). It is translated 4 units right and 1 unit down.

Write the coordinates of the translated vertices in the same order.

Answer: ___

**(2)**

---

**35** An angle measures 320 degrees. Is it acute, obtuse or reflex?

Answer: ___

**(1)**

---

**36** An isosceles triangle has an angle of 130 degrees between its two equal sides.

What size is each of the other two angles?

Answer: ___ degrees

**(2)**


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**37** Three angles in a quadrilateral are 73, 56 and 78 degrees.

What is the fourth angle?

Answer: ___ degrees

**(2)**

---

**38** What is the name of a polygon with 8 sides?

Answer: ___

**(1)**

---

**39** Point P is at (0, 8). It moves 1 unit right.

What are the coordinates of the new point?

Answer: (___, ___)

**(2)**

---

**40** At 7 o'clock, what is the smaller angle between the hour hand and the minute hand?

Answer: ___ degrees

**(2)**


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**41** The four angles inside a quadrilateral are 92 degrees, 88 degrees, 101 degrees and y degrees. Work out the value of y.

**(2)**

---

**42** A line joins (1, 7) and (5, 7).

What are the coordinates of the midpoint of the line?

Answer: (___, ___)

**(2)**

---

**43** How many edges does a prism with a triangular cross-section (3 sides) have?

Answer: ___

**(1)**

---

**44** I am a quadrilateral. I have 2 pairs of parallel sides and 0 lines of symmetry.

What shape am I?

Answer: ___

**(2)**

---

**45** What is the name of a polygon with 4 sides?

Answer: ___

**(1)**


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**46** How many lines of symmetry does a rhombus have?

Answer: ___

**(1)**

---

**47** Four angles meet at a point and add up to 360 degrees. Three of the angles are 65, 46 and 71 degrees.

What is the fourth angle?

Answer: ___ degrees

**(2)**

---

**48** Through how many degrees is a turn of 1/6 of a full turn?

Answer: ___ degrees

**(2)**

---

**49** How many vertices does a hexagonal-based pyramid have?

Answer: ___

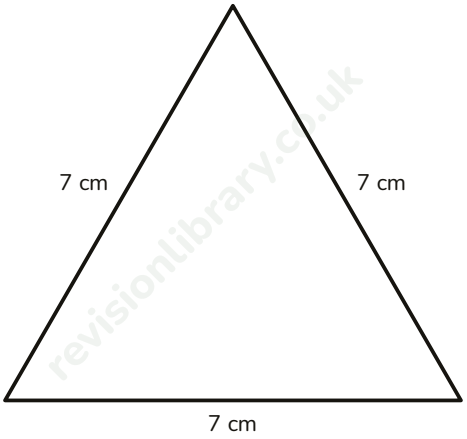
**(2)**


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**50** A regular triangle has all sides equal. Each side is 7 cm.

What is its perimeter?

Answer: ___ cm




**(1)**

---

**51** A right angle is split into two angles. One of them is 73 degrees.

What is the other?

Answer: ___ degrees

**(1)**

---

**52** How many edges does a square-based pyramid have?

Answer: ___

**(2)**


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**53** An isosceles triangle has an angle of 82 degrees between its two equal sides.

What size is each of the other two angles?

Answer: ___ degrees

**(2)**

---

**54** At 4 o'clock, what is the smaller angle between the hour hand and the minute hand?

Answer: ___ degrees

**(2)**

---

**55** A circle has a radius of 18 cm. What is its diameter?

Answer: ___ cm

**(1)**


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**56** Through how many degrees is a turn of 2/3 of a full turn?

Answer: ___ degrees

**(1)**

---

**57** A shape has vertices A(4, 4), B(4, 0), C(1, 2), D(0, 5). It is translated 2 units right and 2 units up.

Write the coordinates of the translated vertices in the same order.

Answer: ___

**(2)**


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# Mark scheme · 8.2 Geometry: Properties of Shapes and Angles: 2-hour Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

### Question 1

one coordinate correct — M1
(-2, 4) cao — A1
Answer: **(-2, 4)**

### Question 2

30 degrees for each hour — M1
90 degrees cao — A1
Answer: **90 degrees**

### Question 3

286 seen — M1
74 degrees cao — A1
Answer: **74 degrees**

### Question 4

uses a rule or counts carefully — M1
7 cao — A1
Answer: **7**

### Question 5

2 cao — B1
Answer: **2**

### Question 6

30 degrees for each number — M1
120 degrees cao — A1
Answer: **120 degrees**

### Question 7

32 cm cao — B1
Answer: **32 cm**

### Question 8

two vertices correct — M1
(5, 10), (7, 7), (5, 9) cao — A1
Answer: **(5, 10), (7, 7), (5, 9)**

### Question 9

6 cao — B1
Answer: **6**

### Question 10

one coordinate correct — M1
(-1, 0) cao — A1
Answer: **(-1, 0)**

### Question 11

uses a rule or counts carefully — M1
9 cao — A1
Answer: **9**

### Question 12

1 cao — B1
Answer: **1**

### Question 13

uses a rule or counts carefully — M1
5 cao — A1
Answer: **5**

### Question 14

uses a rule or counts carefully — M1
12 cao — A1
Answer: **12**

### Question 15

identifies the corners not already joined — M1
8 cao — A1
Answer: **8**

### Question 16

180 - 118 seen or implied — M1
62 degrees cao — A1
Answer: **62 degrees**

### Question 17

215 degrees cao — B1
Answer: **215 degrees**

### Question 18

two vertices correct — M1
(7, 6), (5, 6), (1, 6) cao — A1
Answer: **(7, 6), (5, 6), (1, 6)**

### Question 19

6 cao — B1
Answer: **6**

### Question 20

reflex cao — B1
Answer: **reflex**

### Question 21

halves the horizontal distance — M1
(-1, 5) cao — A1
Answer: **(-1, 5)**


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## Question 22

| | |
|---|---|
| 130 seen | M1 |
| 50 degrees cao | A1 |

Answer: **50 degrees**

## Question 23

| | |
|---|---|
| 360 - 95 - 140 seen or implied | M1 |
| 125 degrees cao | A1 |

Answer: **125 degrees**

## Question 24

| | |
|---|---|
| 9 cao | B1 |

Answer: **9**

## Question 25

| | |
|---|---|
| 140 seen | M1 |
| 40 degrees cao | A1 |

Answer: **40 degrees**

## Question 26

| | |
|---|---|
| 32 cm cao | B1 |

Answer: **32 cm**

## Question 27

| | |
|---|---|
| adds the vector | M1 |
| (9, 9) cao | A1 |

Answer: **(9, 9)**

## Question 28

| | |
|---|---|
| 101 seen | M1 |
| 79 degrees cao | A1 |

Answer: **79 degrees**

## Question 29

| | |
|---|---|
| uses a rule or counts carefully | M1 |
| 15 cao | A1 |

Answer: **15**

## Question 30

| | |
|---|---|
| diameter 4 seen | M1 |
| 8 cm cao | A1 |

Answer: **8 cm**

## Question 31

| | |
|---|---|
| square cao | B1 |

Answer: **square**

## Question 32

| | |
|---|---|
| 180 - 48 - 67 seen or implied | M1 |
| x = 65 cao | A1 |

Answer: **x = 65 degrees**

## Question 33

| | |
|---|---|
| 85 seen | M1 |
| 95 degrees cao | A1 |

Answer: **95 degrees**

## Question 34

| | |
|---|---|
| two vertices correct | M1 |
| (4, 0), (5, 1), (10, 5), (5, 5) cao | A1 |

Answer: **(4, 0), (5, 1), (10, 5), (5, 5)**

## Question 35

| | |
|---|---|
| reflex cao | B1 |

Answer: **reflex**

## Question 36

| | |
|---|---|
| 50 seen | M1 |
| 25 degrees cao | A1 |

Answer: **25 degrees**

## Question 37

| | |
|---|---|
| 207 seen | M1 |
| 153 degrees cao | A1 |

Answer: **153 degrees**

## Question 38

| | |
|---|---|
| octagon cao | B1 |

Answer: **octagon**

## Question 39

| | |
|---|---|
| one coordinate correct | M1 |
| (1, 8) cao | A1 |

Answer: **(1, 8)**

## Question 40

| | |
|---|---|
| 30 degrees for each hour | M1 |
| 150 degrees cao | A1 |

Answer: **150 degrees**

## Question 41

| | |
|---|---|
| 360 - 92 - 88 - 101 seen or implied | M1 |
| y = 79 cao | A1 |

Answer: **y = 79 degrees**

## Question 42

| | |
|---|---|
| halves the horizontal distance | M1 |
| (3, 7) cao | A1 |

Answer: **(3, 7)**

## Question 43

| | |
|---|---|
| 9 cao | B1 |

Answer: **9**

## Question 44

| | |
|---|---|
| eliminates at least one shape | M1 |
| parallelogram cao | A1 |

Answer: **parallelogram**

## Question 45

| | |
|---|---|
| quadrilateral cao | B1 |

Answer: **quadrilateral**

## Question 46

| | |
|---|---|
| 2 cao | B1 |

Answer: **2**


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## Question 47

| | |
|---|---|
| 182 seen | M1 |
| 178 degrees cao | A1 |

Answer: **178 degrees**

## Question 48

| | |
|---|---|
| 360 divided by the denominator | M1 |
| 60 degrees cao | A1 |

Answer: **60 degrees**

## Question 49

| | |
|---|---|
| uses a rule or counts carefully | M1 |
| 7 cao | A1 |

Answer: **7**

## Question 50

| | |
|---|---|
| 21 cm cao | B1 |

Answer: **21 cm**

## Question 51

| | |
|---|---|
| 17 degrees cao | B1 |

Answer: **17 degrees**

## Question 52

| | |
|---|---|
| uses a rule or counts carefully | M1 |
| 8 cao | A1 |

Answer: **8**

## Question 53

| | |
|---|---|
| 98 seen | M1 |
| 49 degrees cao | A1 |

Answer: **49 degrees**

## Question 54

| | |
|---|---|
| 30 degrees for each hour | M1 |
| 120 degrees cao | A1 |

Answer: **120 degrees**

## Question 55

| | |
|---|---|
| 36 cm cao | B1 |

Answer: **36 cm**

## Question 56

| | |
|---|---|
| 240 degrees cao | B1 |

Answer: **240 degrees**

## Question 57

| | |
|---|---|
| two vertices correct | M1 |
| (6, 6), (6, 2), (3, 4), (2, 7) cao | A1 |

Answer: **(6, 6), (6, 2), (3, 4), (2, 7)**


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