

Name _____

Date _____

5.3 Drawing lines and quadrilaterals — worksheet

Draw parallel and perpendicular lines, and quadrilaterals, using a ruler and a protractor. · 104 questions · Show your working.

Remember

- Measure and draw angles with a **protractor**; measure lengths with a ruler.
- Put the centre of the protractor on the vertex and one arm on a zero, then read **that same scale** round to the other arm.
- Check every reading against how the angle looks: an acute angle cannot be 130° .
- **Parallel** lines are marked with matching arrows; **perpendicular** lines with a small square.
- **Square**: four equal sides, four right angles. **Rectangle**: four right angles.
- **Rhombus**: four equal sides. **Parallelogram**: two pairs of parallel sides.
- **Trapezium**: exactly one pair of parallel sides. **Kite**: two pairs of adjacent equal sides.
- In any parallelogram, adjacent angles add to 180° and opposite angles are equal.

A · Fluency — Name the quadrilateral, classify the angle.

- Which quadrilateral is being described? *Four equal sides and four right angles.*

- Which quadrilateral is being described? *Four equal sides and four right angles. Both pairs of opposite sides are parallel.*

- Which quadrilateral is being described? *Four right angles, with opposite sides equal.*

- Which quadrilateral is being described? *Four right angles, with opposite sides equal. Both pairs of opposite sides are parallel.*

- Which quadrilateral is being described? *Four equal sides, with opposite angles equal.*

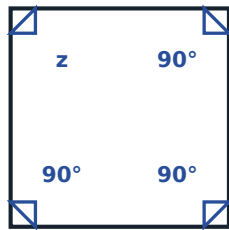
- Which quadrilateral is being described? *Four equal sides, with opposite angles equal. Both pairs of opposite sides are parallel.*

- Which quadrilateral is being described? *Two pairs of parallel sides, with opposite sides and angles equal.*

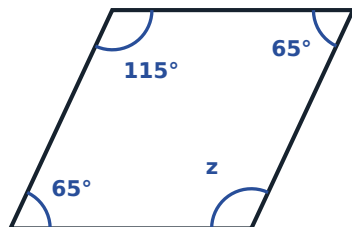
- Which quadrilateral is being described? *Two pairs of parallel sides, with opposite sides and angles equal. It has no lines of symmetry unless it is a rhombus or rectangle.*

- Which quadrilateral is being described? *Exactly one pair of parallel sides.*

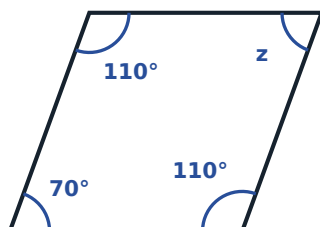
- 10** Which quadrilateral is being described? *Exactly one pair of parallel sides. The parallel sides may be different lengths.*
-
- 11** Which quadrilateral is being described? *Two pairs of equal sides next to each other.*
-
- 12** Which quadrilateral is being described? *Two pairs of equal sides next to each other. One pair of opposite angles is equal, and it has one line of symmetry.*
-
- 13** This parallelogram has three angles marked. Work out angle **z**, in degrees.



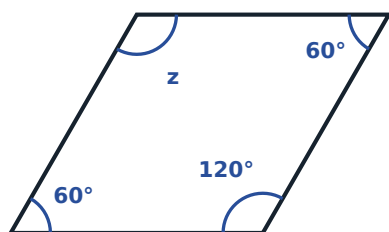
- 14** This parallelogram has three angles marked. Work out angle **z**, in degrees.



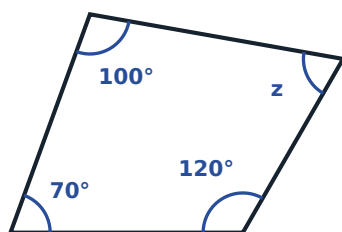
- 15** This parallelogram has three angles marked. Work out angle **z**, in degrees.



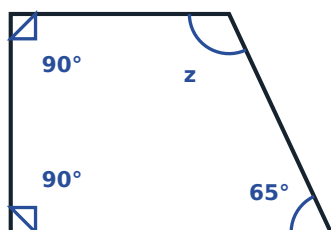
- 16** This parallelogram has three angles marked. Work out angle z , in degrees.



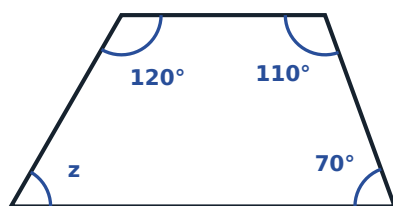
- 17** This quadrilateral has three angles marked. Work out angle z , in degrees.



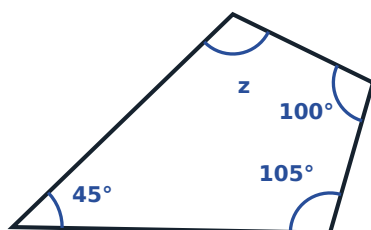
- 18** This quadrilateral has three angles marked. Work out angle z , in degrees.



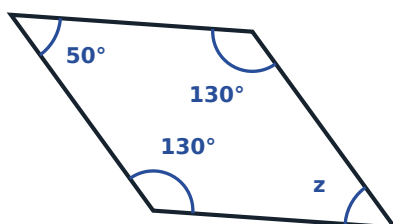
- 19** This quadrilateral has three angles marked. Work out angle **z**, in degrees.



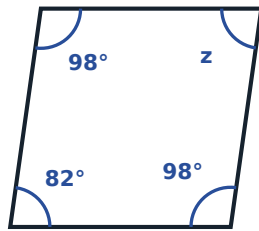
- 20** This quadrilateral has three angles marked. Work out angle **z**, in degrees.



- 21** This parallelogram has three angles marked. Work out angle **z**, in degrees.



- 22** This parallelogram has three angles marked. Work out angle **z**, in degrees.



- 23** An angle measures 35° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 24** An angle measures 90° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 25** An angle measures 128° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 26** An angle measures 72° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 27** An angle measures 155° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 28** An angle measures 90° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex

- 29** An angle measures 15° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 30** An angle measures 99° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 31** An angle measures 5° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 32** An angle measures 89° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 33** An angle measures 91° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 34** An angle measures 179° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 35** An angle measures 200° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 36** An angle measures 270° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex

- 37** An angle measures 315° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 38** An angle measures 181° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 39** An angle measures 44° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 40** An angle measures 135° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 41** An angle measures 60° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 42** An angle measures 108° . What type of angle is it?
- ☐ acute
 - ☐ right
 - ☐ obtuse
 - ☐ reflex
- 43** You draw a straight line and mark an angle of 40° on it. What is the angle on the other side, in degrees?
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- 44** You draw a straight line and mark an angle of 75° on it. What is the angle on the other side, in degrees?
-
- 45** You draw a straight line and mark an angle of 110° on it. What is the angle on the other side, in degrees?
-
- 46** You draw a straight line and mark an angle of 25° on it. What is the angle on the other side, in degrees?
-
- 47** You draw a straight line and mark an angle of 90° on it. What is the angle on the other side, in degrees?
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- 48 You draw a straight line and mark an angle of 63° on it. What is the angle on the other side, in degrees?

- 49 You draw a straight line and mark an angle of 12° on it. What is the angle on the other side, in degrees?

- 50 You draw a straight line and mark an angle of 138° on it. What is the angle on the other side, in degrees?

- 51 You draw a straight line and mark an angle of 55° on it. What is the angle on the other side, in degrees?

- 52 You draw a straight line and mark an angle of 81° on it. What is the angle on the other side, in degrees?

- 53 You draw a straight line and mark an angle of 28° on it. What is the angle on the other side, in degrees?

- 54 You draw a straight line and mark an angle of 147° on it. What is the angle on the other side, in degrees?

- 55 You draw a straight line and mark an angle of 5° on it. What is the angle on the other side, in degrees?

- 56 You draw a straight line and mark an angle of 119° on it. What is the angle on the other side, in degrees?

- 57 You draw a straight line and mark an angle of 72° on it. What is the angle on the other side, in degrees?

- 58 You draw a straight line and mark an angle of 94° on it. What is the angle on the other side, in degrees?

B · Reasoning — Using the instruments, and the shape families.

- 59 Which instrument do you use to measure an angle?
- ☐ ruler
 - ☐ protractor
 - ☐ compasses
 - ☐ set square
- 60 A protractor has two scales. How do you know which one to read?
- ☐ Always read the outer one
 - ☐ Always read the inner one
 - ☐ Start from the zero that lies on one arm of the angle
 - ☐ Read whichever is larger

- 61** You measure an angle that clearly looks acute and read 130° . What has gone wrong?
- ☐ Nothing
 - ☐ You read the wrong scale
 - ☐ The protractor is broken
 - ☐ Acute angles cannot be measured
- 62** How do you draw a line perpendicular to another?
- ☐ Measure 45° from it
 - ☐ Measure 90° from it
 - ☐ Draw it parallel
 - ☐ Draw it any way you like
- 63** How are parallel lines marked on a diagram?
- ☐ With a small square
 - ☐ With matching arrows
 - ☐ With dashes
 - ☐ With a letter
- 64** How is a right angle marked on a diagram?
- ☐ With an arc
 - ☐ With a small square
 - ☐ With an arrow
 - ☐ With a dot
- 65** Which quadrilateral has four equal sides and four right angles?
- _____
- 66** Which quadrilateral has exactly one pair of parallel sides?
- _____
- 67** Which quadrilateral has two pairs of equal sides next to each other and one line of symmetry?
- _____
- 68** Is every square also a rectangle?
- ☐ Yes
 - ☐ No
- 69** Is every rectangle also a square?
- ☐ Yes
 - ☐ No
- 70** Is every rhombus also a parallelogram?
- ☐ Yes
 - ☐ No

C · Challenge — Angles inside the special quadrilaterals.

- 71** You are drawing a quadrilateral. You have drawn angles of 100° , 85° and 95° . What must the fourth angle be, in degrees?
- _____

- 72** You draw a parallelogram with one angle of 65° . What is the angle next to it, in degrees?

- 73** You draw a parallelogram with one angle of 65° . What is the angle opposite it, in degrees?

- 74** A rhombus has one angle of 110° . What is the angle next to it, in degrees?

- 75** A kite has angles of 100° , 70° and 70° . What is the fourth angle, in degrees?

- 76** A trapezium has two right angles and one angle of 115° . What is the fourth angle, in degrees?

- 77** A quadrilateral has four equal sides but no right angles. What is it?

- 78** A quadrilateral has opposite sides equal and parallel, but no right angles and no equal adjacent sides. What is it?

- 79** A parallelogram has one angle of 48° . What is the sum of its two obtuse angles, in degrees?

- 80** A trapezium has one pair of parallel sides. One angle on a slanting side is 55° . What is the co-interior angle at the other end of that side, in degrees?

- 81** You are drawing a quadrilateral. You have drawn 62° , 118° and 62° . What must the fourth angle be, in degrees?

- 82** Can a trapezium have four right angles?
☐ Yes
☐ No
- 83** Can a kite have four equal sides?
☐ Yes
☐ No
- 84** A rhombus has one angle of 145° . What is the sum of its two acute angles, in degrees?

D · Word problems — Shapes and angles in real objects.

- 85** A gate is a rectangle. What is the size of each of its angles, in degrees?

- 86** A tile is a rhombus with one angle of 60° . What is the angle next to it, in degrees?

- 87** A ramp is a trapezium. Two of its angles are 90° and 90° , and a third is 100° . What is the fourth, in degrees?

- 88** A window pane has four equal sides and four right angles. What shape is it?

- 89** A road sign has exactly one pair of parallel sides. What shape is it?

- 90** A picture frame is a parallelogram with one angle of 78° . What is the largest angle, in degrees?

- 91** A field is a quadrilateral with angles 88° , 97° and 104° . What is the fourth angle, in degrees?

- 92** A child's toy has two pairs of equal sides next to each other. What shape is it?

- 93** A shelf must be perpendicular to the wall. What angle do you set on your protractor, in degrees?

- 94** Two shelves must be parallel. The first is at 15° to the floor. At what angle is the second, in degrees?

- 95** A designer draws a quadrilateral with three angles of 90° . What must the fourth be, in degrees?

- 96** A banner is a kite with two angles of 55° and one of 130° . What is the fourth angle, in degrees?

- 97** A ladder is set at 68° to the ground. You want to draw this accurately. What angle do you set on the protractor, in degrees?

- 98** A garden bed has opposite sides parallel and all four sides equal, but no right angles. What shape is it?

- 99** A table top is a parallelogram with one angle of 105° . What is the smallest angle, in degrees?

- 100** A flag is a quadrilateral with angles 110° , 70° and 110° . What is the fourth, in degrees?

- 101** A bookshelf bracket must make a right angle with the wall. What angle does it make with a shelf that is perpendicular to the bracket, in degrees?

- 102** A window is a quadrilateral with four right angles but not four equal sides. What shape is it?

103 You draw two lines that make an angle of 90° . What word describes them? Answer 1 if 'perpendicular', 0 if 'parallel'.

104 A designer draws a trapezium with angles 90° , 90° and 58° . What is the fourth angle, in degrees?
