

Mathletics

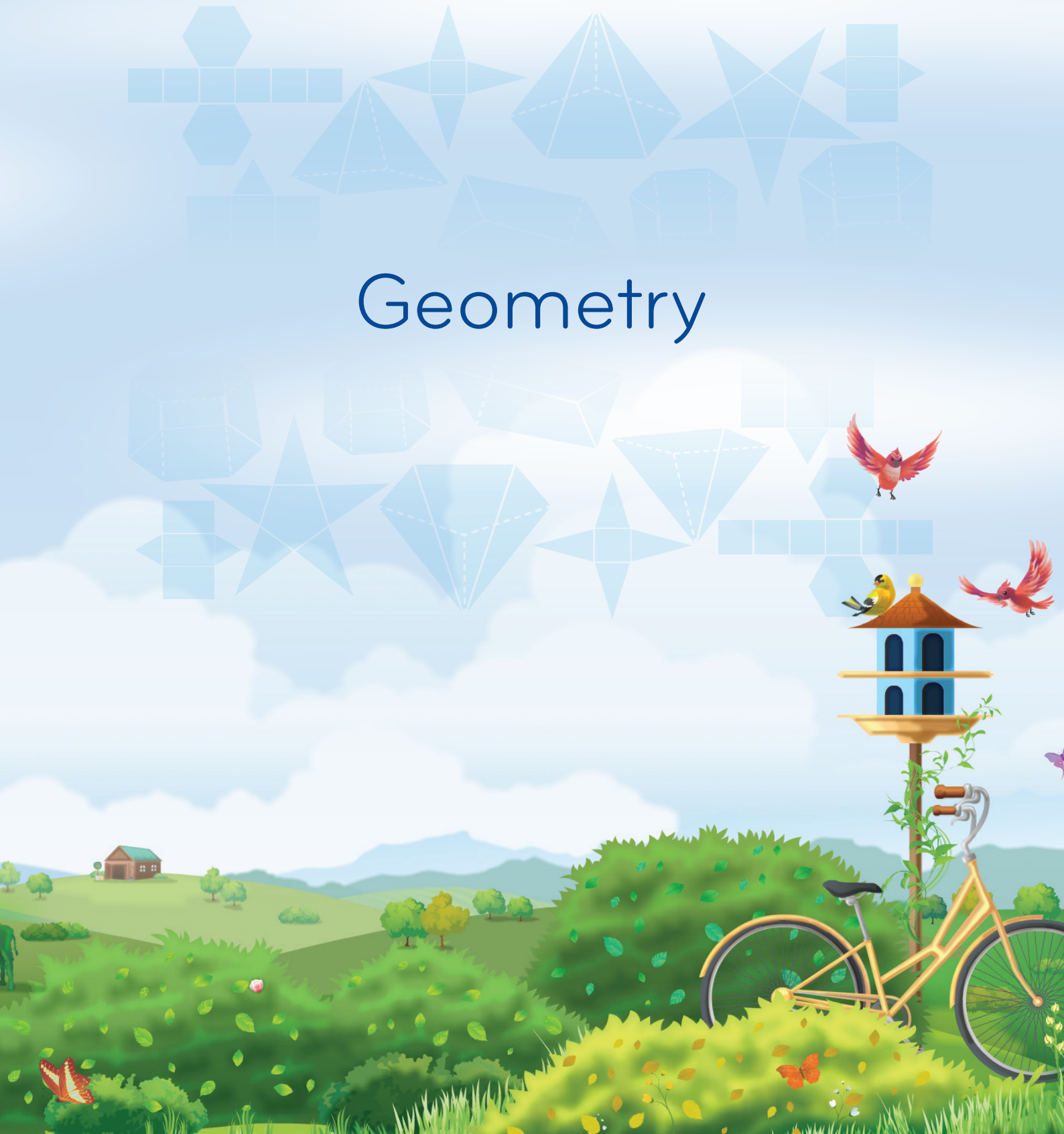
Series



Teacher



Geometry



Series F – Geometry

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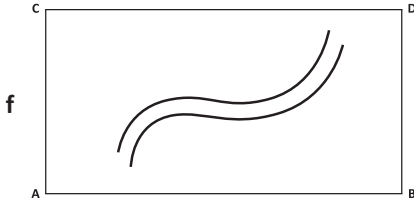
Series Authors:

Rachel Flenley
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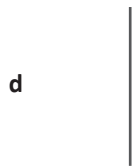
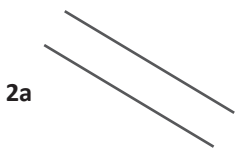
Series F – Geometry

Pages 1–2

- 1a flat
 b right angle
 c yes
 d parallel



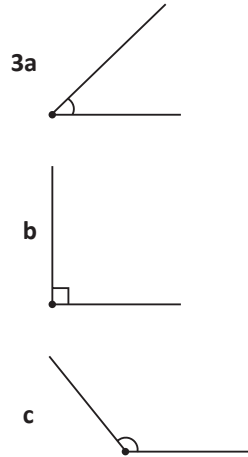
g Answers will vary.



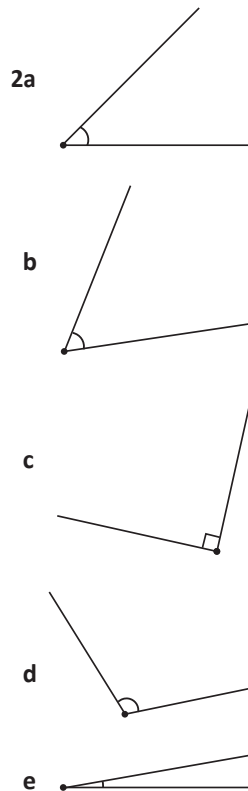
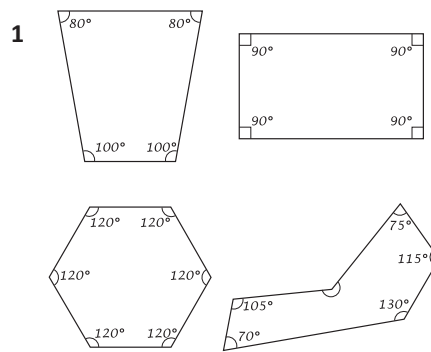
- 3a 180°
 b 90°
 c 45°

Page 3

- 1a acute
 b right
 c obtuse
 d obtuse
 e acute
 f acute
- 2a reflex
 c acute
 d obtuse



Pages 4–5



3 325; 270

Page 6

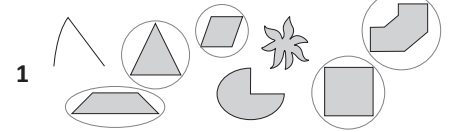
What to do

- a 60
 b 180
 c 330
- a 120
 b 60

What to do next

15°

Pages 7–8



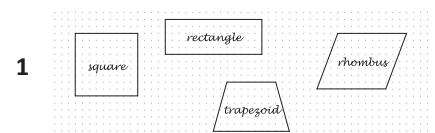
- 2a irregular
 b regular
 c irregular
 d regular
 e regular
 f irregular

3b quadrilateral

- c pentagon
 d hexagon
 e heptagon
 f octagon
 g nonagon
 h decagon
 i hendecagon
 j dodecagon

4 Answers will vary and may include: square, rectangle, quadrilateral, rhombus, kite and arrowhead.

Pages 9–10

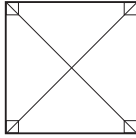


- 2a 360°
 b Teacher check.

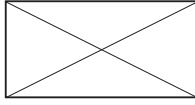
Series F – Geometry

Pages 9–10

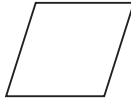
3a square;



b rectangle;



c rhombus;

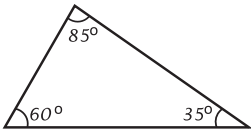
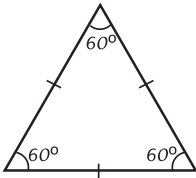


d trapezium;



Pages 11–12

1



2a 2

b 3

c 0

3a 2

b 3

c 0

4 The number of equal angles is the same as the number of equal sides.

5a Yes

b No. Because in an equilateral triangle, each angle is always 60° .

6 Answers will vary.

Pages 13–15

1a 4

b 3

c 8

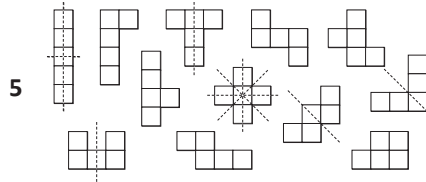
d 6

2 A regular polygon has the same number of lines of symmetry as it has sides.

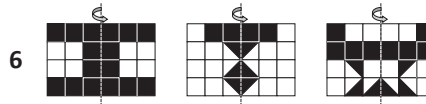
3

Vertical line of symmetry	Horizontal line of symmetry	More than one line of symmetry	No lines of symmetry
A			F
H	B		G
I	C		J
M	D		L
O	E	H	N
T	H	I	P
U	I	O	Q
V	K	X	R
W	O		S
X	X		Z
Y			

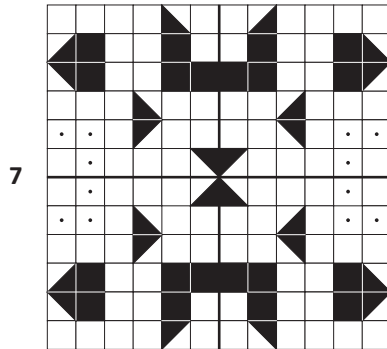
4 Answers will vary.



5



6



7

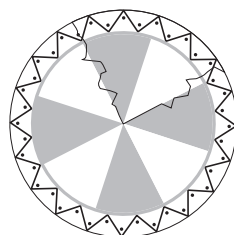
Page 16

What to do

Shape	Number of sides	Number of triangles	Sum of angles
square	4	2	360°
pentagon	5	3	540°
hexagon	6	4	720°
octagon	8	6	$1,080^\circ$
decagon	10	8	$1,440^\circ$
dodecagon	12	10	$1,800^\circ$

Page 17

What to do



Page 18

1a 6

b squares; rectangles

c rectangle, 4; triangles

d 1; pentagon; 5

2a 4

b 4

c 6

3a ✓

b X; 8

c X; 12

Pages 19–21

1b rectangular

c triangular

d pentagonal

2 They're the same.

3 Answers will vary.

4a hexagonal

b triangular

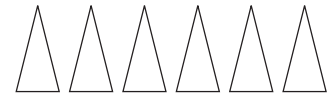
c rectangular

5 They're the same.

6 Hexagon base



6 triangular faces



7 Answers will vary and may include:

– Pyramids and prisms are made up of polygons/flatsides.

– Pyramids and prisms have angles, vertices and edges.

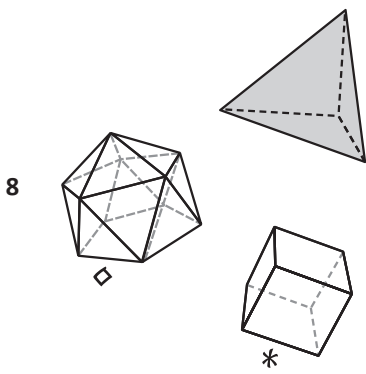
– Pyramids and prisms have straight edges.

– Pyramids have 1 point at the top, prisms don't.

– The sides of a pyramid are triangular, prisms have rectangular sides.

Series F – Geometry

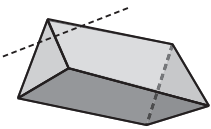
Pages 19–21



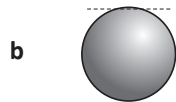
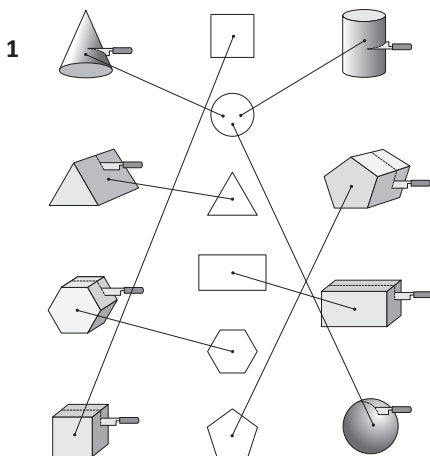
- # octahedron
- tetrahedron
- 4 faces, 6 edges, 4 vertices
- ◇ dodecahedron
- ◇ icosahedron
- # 8 faces, 12 edges, 6 vertices
- ◇ 12 faces, 30 edges, 20 vertices
- * cube or hexahedron
- * 6 faces, 12 edges, 8 vertices
- ◇ 20 faces, 30 edges, 12 vertices

9 Answers will vary.

10 Answers will vary.
Possible answer:



Page 22



Page 24

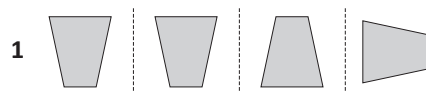
What to do

Observe students.

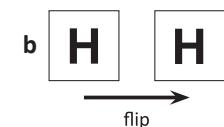
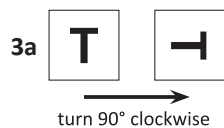
What to do next

Answers will vary.

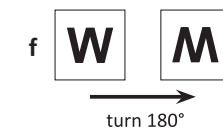
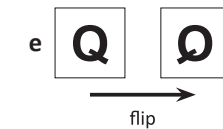
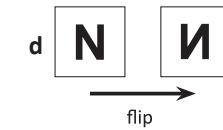
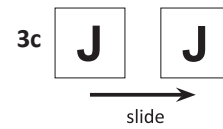
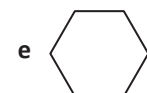
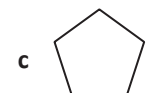
Pages 25–26



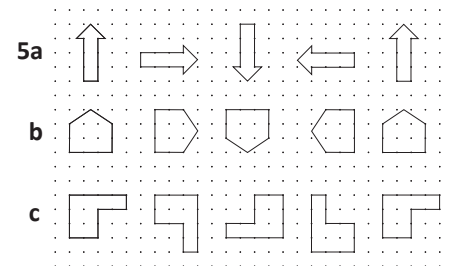
2 slide; turn; flip; slide; turn; flip



Page 23



4 Answers will vary.

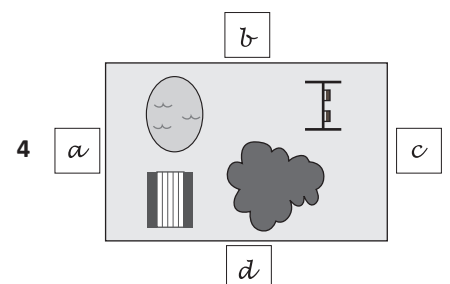
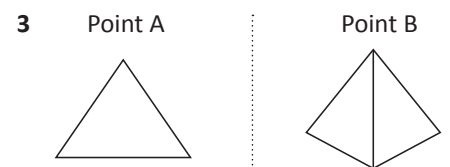


Pages 27–28



No, the chest is not on the left hand side because I am in a different position so it's now on my right hand side.

2 Answers will vary.



Series F – Geometry

Pages 27–28

5 Answers will vary.

Pages 29–30

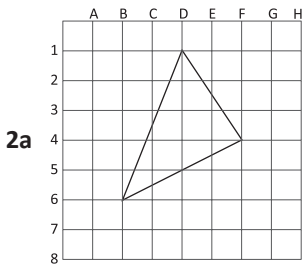
1a, b Teacher check.

2 Teacher check.

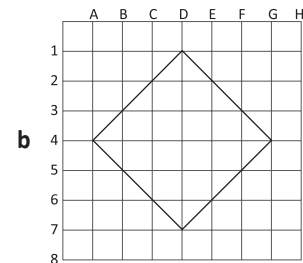
3 Teacher check.

Pages 31–35

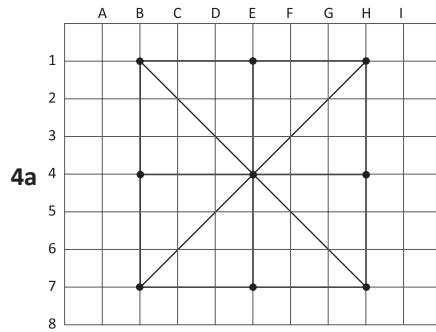
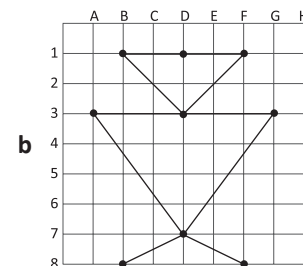
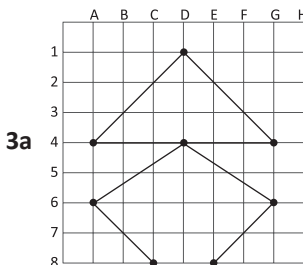
1	☺	G5
	◆	E7
	⌘	B7
	★	D5
	✿	F2
	⊗	B1
	❖	A4



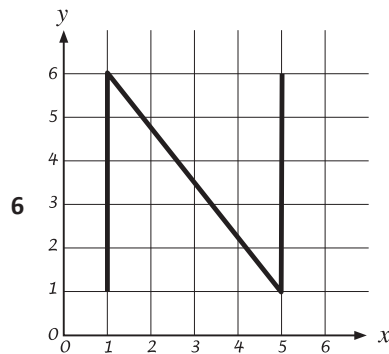
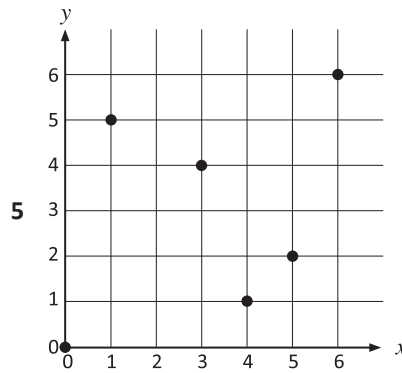
Triangle



Square

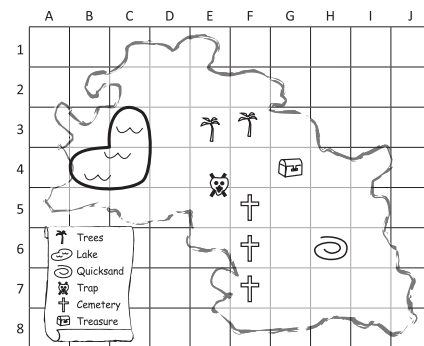


b 16



7 Answers will vary.

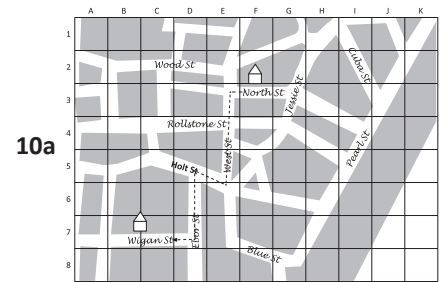
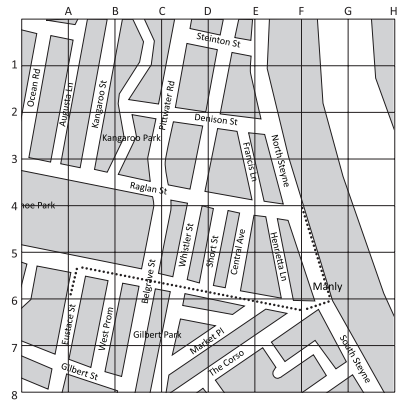
8a-f



9a Steinton and Whistler Streets

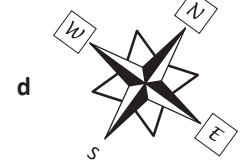
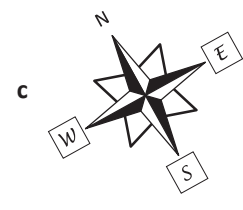
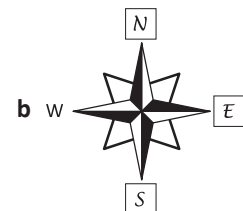
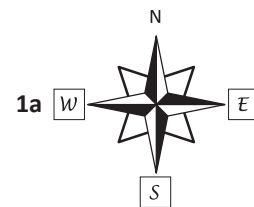
b On South Steyne

9c See dotted line on the map.



b From North St, turn left into West St; then turn right into Holt St; then turn left into Ebor St; then turn right into Wigan St.

Pages 37–38



Series F – Geometry

Pages 37–38

2 Answers will vary.
Sailing, hiking, orienteering

3a West or South West

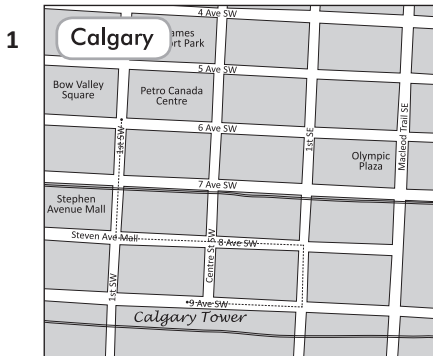
b East

c South

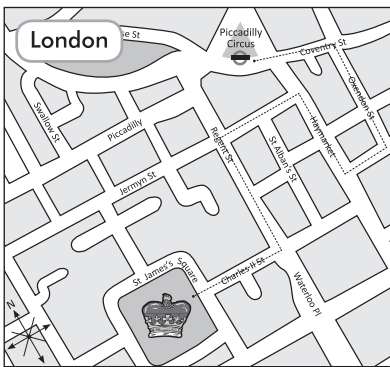
d Answers will vary.

4a, b Answers will vary.

Page 39



Olympic flame



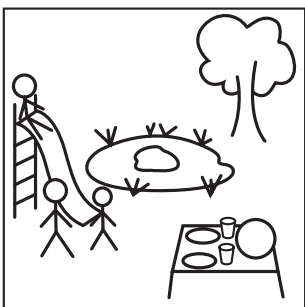
St James's Square

Page 40

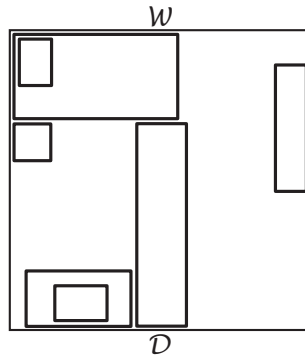
What to do

Observe students.

Reader 1



Reader 2



What to do next

Observe students.

Page 41

What to do

Observe students.

What to do next

Teacher check.

Page 42

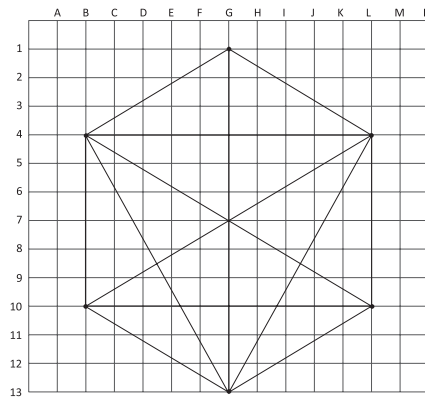
What to do

Answers will vary.

What to do next

Observe students.

Page 43



Page 44

What to do

Answers will vary.

What to do next

Observe students.

Lines and angles

Name _____

1 Draw:

a 2 parallel lines

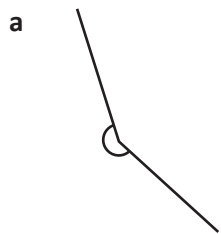
b 2 lines perpendicular to each other

c a horizontal line

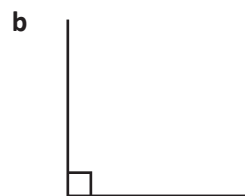
d a vertical line



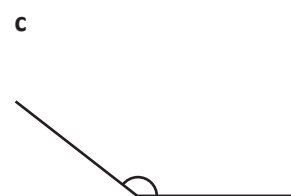
2 Label each of these angles as right, acute, reflex or obtuse:



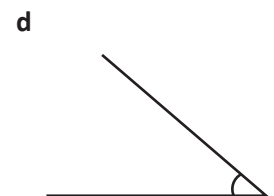
angle



angle



angle



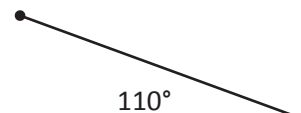
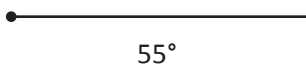
angle

3 Draw an angle that is:

a

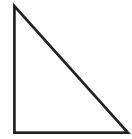
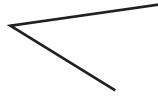
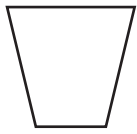
b

c

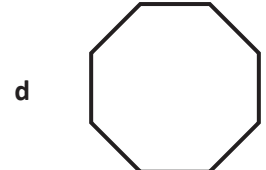
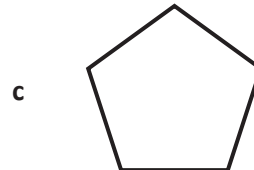
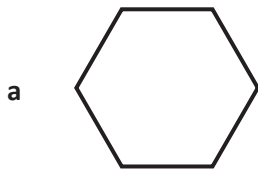


Skills	Not yet	Kind of	Got it
• Knows terms parallel, perpendicular, horizontal, vertical			
• Recognises and labels acute, obtuse, right angled and reflex angles			
• Draws angles to 5° markers			

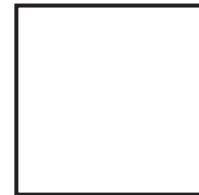
1 Circle the polygons:



2 Name these polygons:



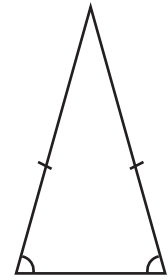
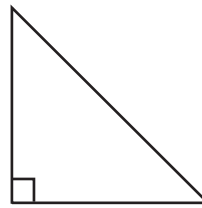
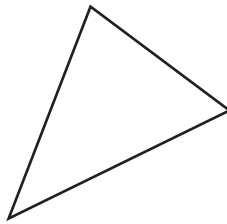
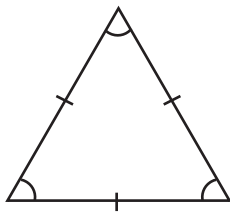
3 Look at the following two quadrilaterals. Name them and list their properties:



2D shapes

Name _____

4 Draw a line from the label to the correct triangle:



isosceles triangle

right angled triangle

equilateral triangle

scalene triangle

5 If I drew a shape and the sum of the angles was 180° , what shape could I have drawn? Draw it.

6 Name and draw this mystery shape:

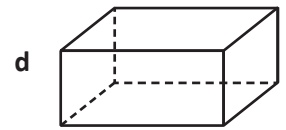
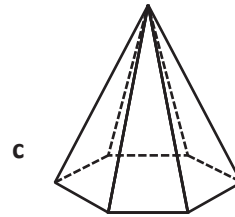
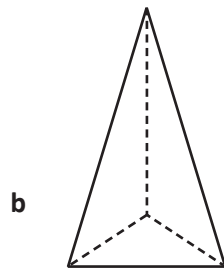
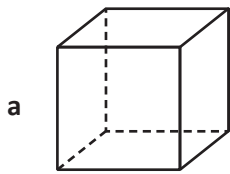
I have 4 sides. All of my angles are equal. If you draw in my diagonals, the lines form right angles where they intersect.

Skills	Not yet	Kind of	Got it
• Recognises and names simple polygons			
• Names properties of simple quadrilaterals			
• Recognises and names different types of triangles			
• Uses knowledge of shape properties to identify simple polygons			

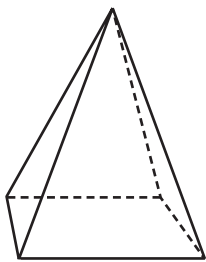
3D shapes

Name _____

1 Name these 3D shapes:

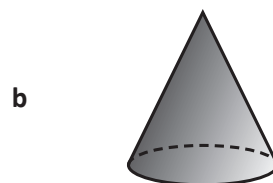
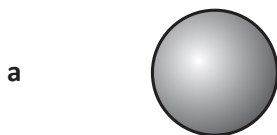


2 Name this shape and list the properties. Make sure you identify how many edges, faces and vertices it has:

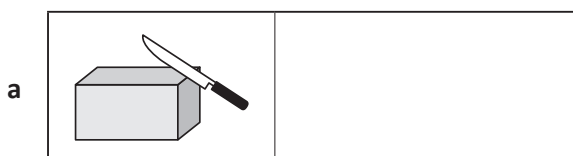


3 How are prisms and pyramids similar? How are they different? Explain using words and/or diagrams:

4 Label each of these 3D shapes:



5 Draw the cross section next to each shape:

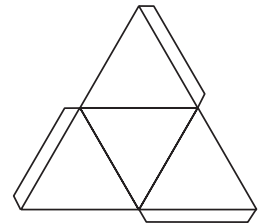
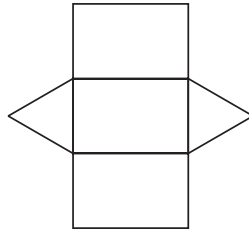
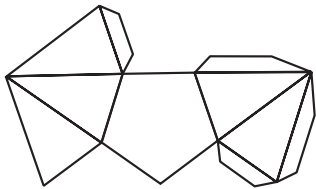


3D shapes

Name _____

6 What is a net? Explain it using words. (We mean the mathematical kind, not the catching butterflies kind.)

7 Draw lines to match the nets to the correct shape names:

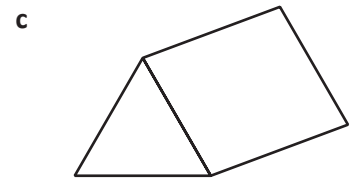
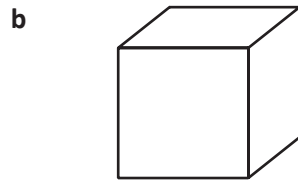
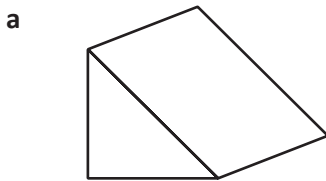


triangular prism

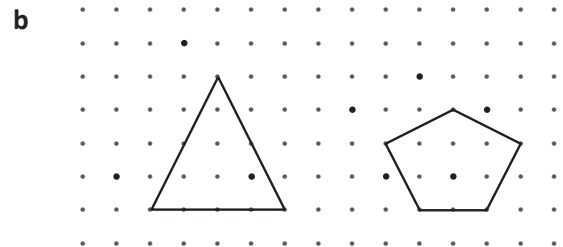
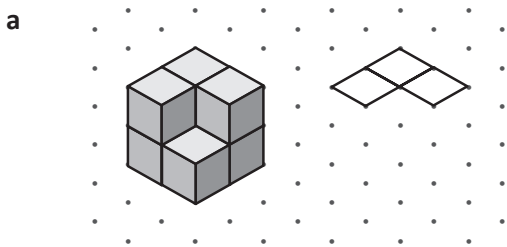
triangular pyramid

pentagonal prism

8 Draw in dotted lines to reveal the missing edges, sides and vertices of these shapes:

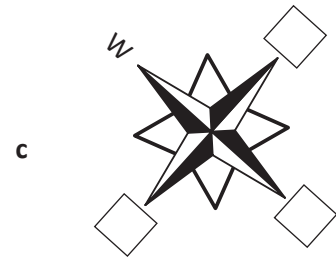
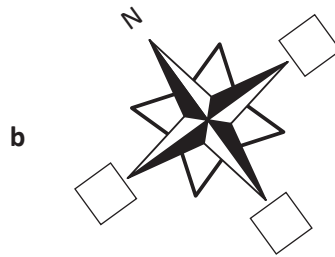
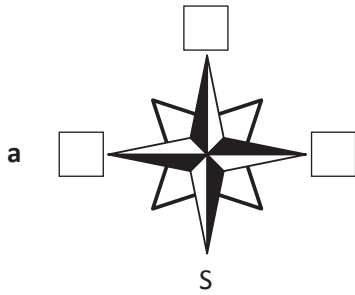


9 Complete these 3D shape drawings:



Skills	Not yet	Kind of	Got it
• Identifies and names simple polyhedrons			
• Identifies properties of a square based pyramid, including faces, edges and vertices			
• Describes similarities and differences between pyramids and prisms			
• Visualises and represents cross sections of polygons			
• Visualises and describes nets			
• Sketches 3D models			

1 Add the missing compass points:



2 Name a place or geographical feature that is:

a north of your town or city

b east of your town or city

c south of your town or city

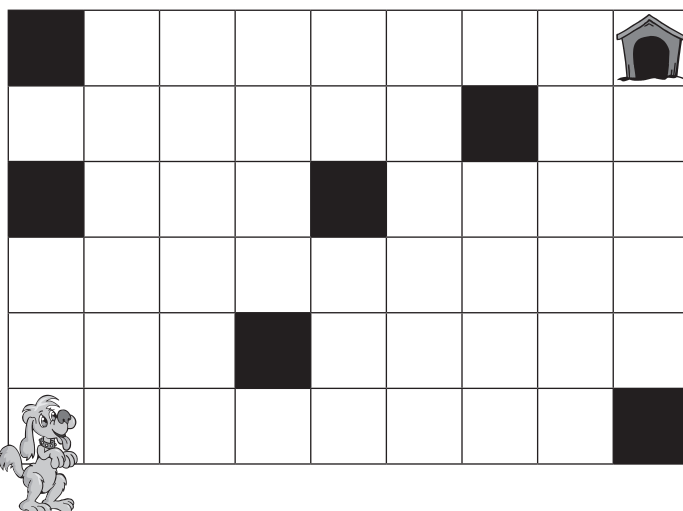
d west of your town or city

3 Draw the following on this table top:

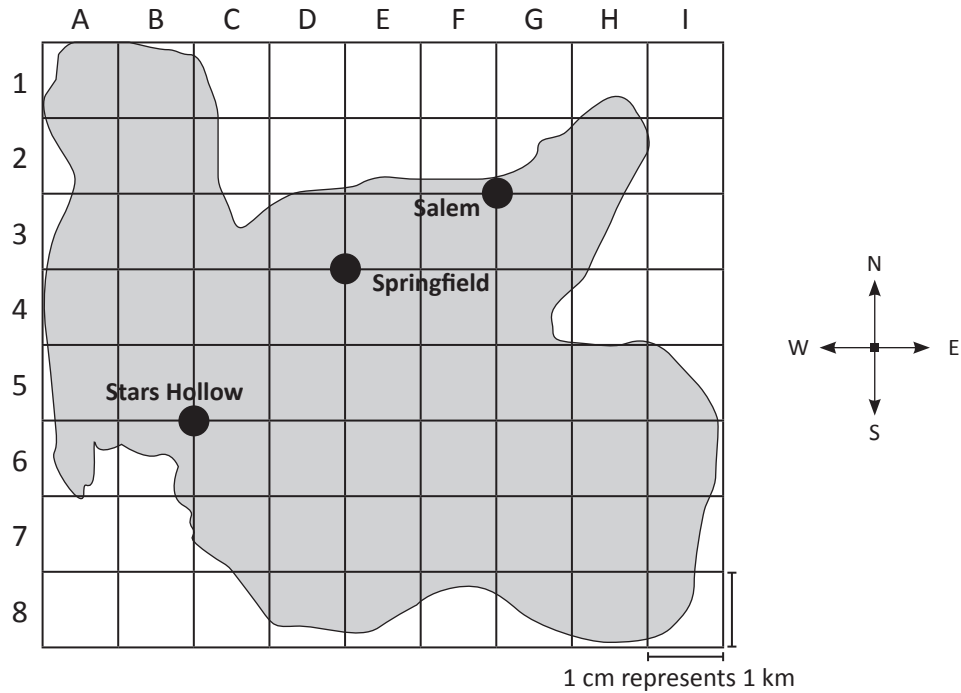
- a an apple in the top right hand corner
- b a banana in the bottom left hand corner
- c a biscuit directly below the apple
- d a glass of milk to the left of the biscuit
- e a pizza slice in the bottom right hand corner
- f a cupcake in the corner diagonally opposite the pizza slice



4 Write a set of directions that would get the dog home to his kennel. It cannot travel through any blacked out square.



5 Complete the following:



- a Add a town called Jonestown at A1.
- b Add a town called Palm Springs 5 km east of Stars Hollow.
- c Add a mountain at G7.
- d Add a lake that covers both points D6 and D5.
- e Add a town called Crabapple 3 km south of Jonestown.
- f Name 2 towns that sit on the same horizontal line. _____
- g What town is north of the lake? _____
- h What town is west of the lake? _____
- i The best swimming beach is 4 km north of Palm Springs. Draw a beach towel at this point.

Skills	Not yet	Kind of	Got it
• Names compass points and identifies locations using N S E W			
• Follows and writes simple directions to place or move objects			
• Describes the direction of one place or object relative to another			
• Positions and locates places on maps using coordinate points			
• Uses a simple scale to calculate distance			

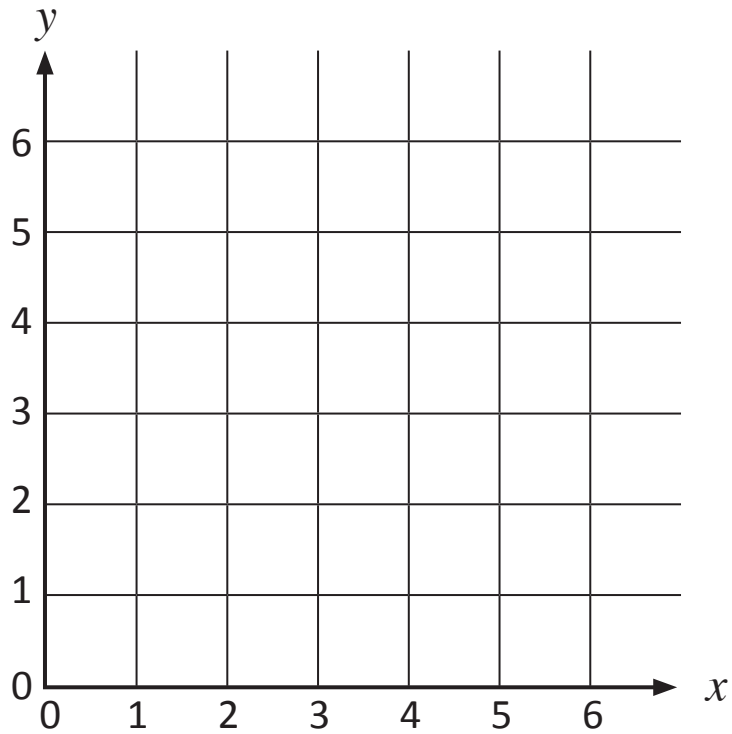
6 Draw lines between the coordinate points below to create a capital letter:

(1, 1) to (2, 6)

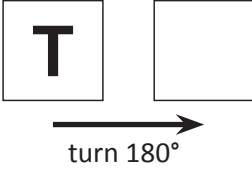
(2, 6) to (3, 1)

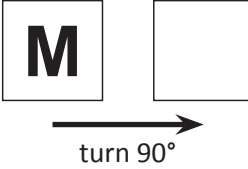
(3, 1) to (4, 6)

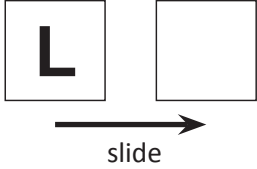
(4, 6) to (5, 1)

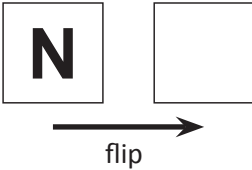


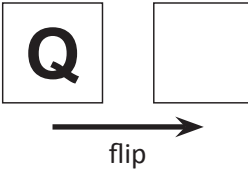
7 Transform these letters:

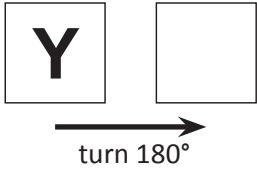
a 

b 

c 

d 

e 

f 

Skills	Not yet	Kind of	Got it
• Names compass points and identifies locations using N S E W			
• Follows and writes simple directions to place or move objects			
• Describes the direction of one place or object relative to another			
• Positions and locates places on maps using coordinate points			
• Positions and locates points on a coordinate grid			
• Visualises and represents transformations – flips, slides, turns			

Series F – Geometry – Student Progress Record

Name _____ Class _____ Date _____

What went well: _____

What I need to improve: _____



Series F – Geometry – Student Progress Record

Name _____ Class _____ Date _____

What went well: _____

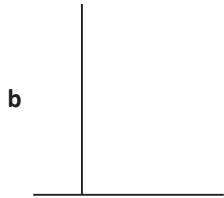
What I need to improve: _____

Series F – Geometry

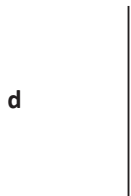
ASSESSMENT ANSWERS

Page 6

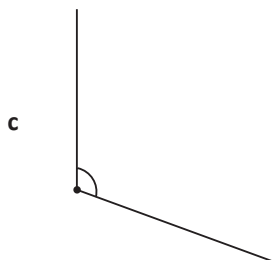
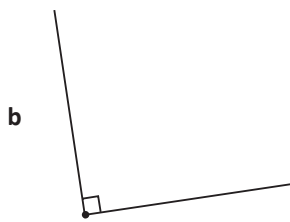
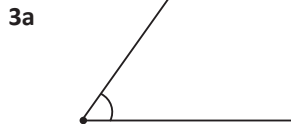
1a _____



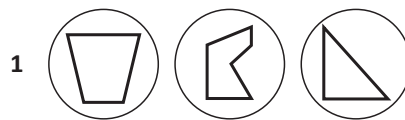
c _____



- 2a reflex
b right
c obtuse
d acute



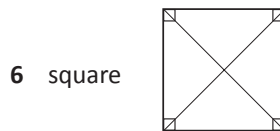
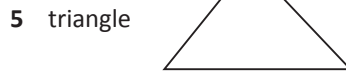
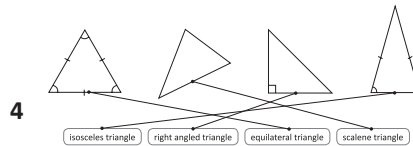
Pages 7–8



- 2a hexagon
b rectangle
c pentagon
d octagon

- 3a trapezium
4 straight sides.
1 pair parallel sides.
2 acute angles (equal).
2 obtuse angles (equal).

- b square
4 straight equal sides.
2 sets of parallel sides and all angles are right angles.



Pages 9–10

- 1a cube or square prism
b triangular pyramid
c hexagonal pyramid
d cuboid or rectangular prism

- 2 Square based pyramid
– 1 square base–
– 4 triangular faces
– 5 vertices
– 8 edges
– 5 faces

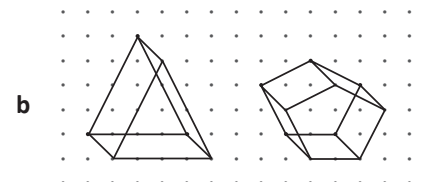
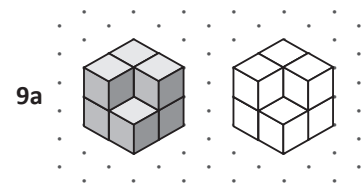
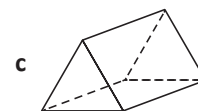
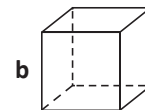
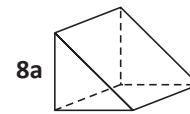
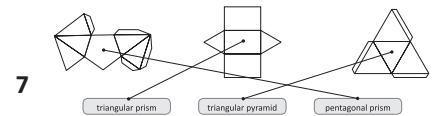
- 3 Answers will vary and may include:
Similarities:
– straight edges
– 3D shapes

- 3 Differences:
– pyramids come to 1 point at the top
– prisms have 2 matching ends
– the faces of a pyramid are triangles, the faces of a prism are rectangles

- 4a sphere
b cone
c cylinder

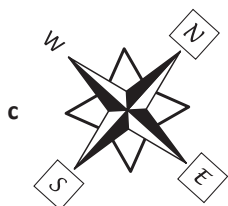
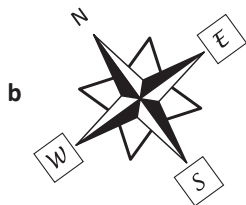
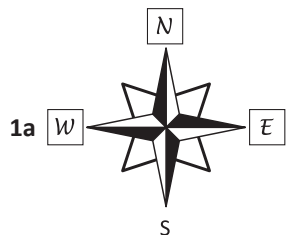


- 6 Answers will vary.

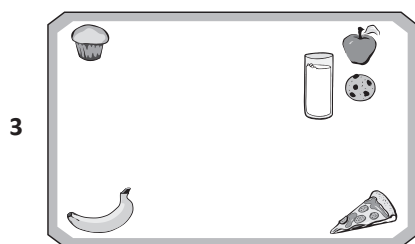


Series F – Geometry

Pages 11–13

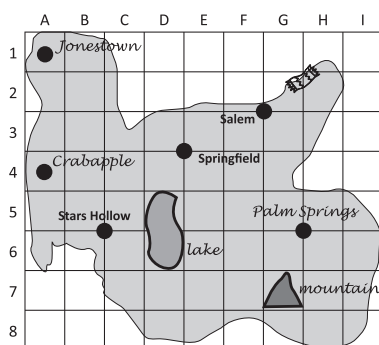


2 Answers will vary.



4 Answers will vary.

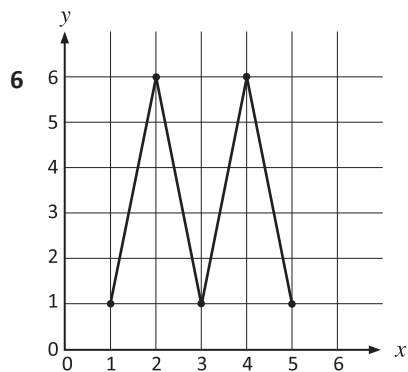
5a–e, i



f Stars Hollow and Palm Springs

g Springfield

h Stars Hollow



turn 180°



turn 90°



slide



flip



flip



turn 180°

Series F – Geometry

Topic	Reference	Strand	Substrand	Objective
Lines and angles	5G2a	Geometry	Properties of shapes	Use the properties of rectangles to deduce related facts and find missing lengths and angles.
Lines and angles	5G4a	Geometry	Properties of shapes	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.
Lines and angles	5G4b	Geometry	Properties of shapes	Identify: angles at a point and one whole turn (total 360°), angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°), other multiples of 90° .
Lines and angles	5G4c	Geometry	Properties of shapes	Draw given angles, and measure them in degrees ($^\circ$).
2D shapes	5G2b	Geometry	Properties of shapes	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
3D shapes	5G3b	Geometry	Properties of shapes	Identify 3D shapes, including cubes and other cuboids, from 2D representations.
Position	5P2	Geometry	Position and direction	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.