

Draw and Order Angles

I can construct angles using a 180° protractor and order the angles according to size (ACMMG112).

Use a protractor to draw each of these angles.

a. 45°

b. 90°

c. 180°

d. 120°

e. 145°

f. 20°

g. 70°

h. 75°

i. 110°

j. 170°

k. 10°

l. 80°

Order the angles into the following groups:

Acute Angles	Right Angles	Obtuse Angles

Draw and Order Angles

I can construct angles using a 180° and 360° protractor and order the angles according to size (ACMMG112).

Use a protractor to draw each of these angles.

a. 65°

b. 140°

c. 35°

d. 200°

e. 10°

f. 180°

g. 5°

h. 90°

i. 250°

j. 105°

k. 55°

l. 300°

Order the angles into the following groups:

Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle

Draw and Order Angles

I can construct angles using a 180° and 360° protractor and order the angles according to size (ACMMG112).

Use a protractor to draw each of these angles.

a. 85°

b. 350°

c. 22°

d. 175°

e. 113°

f. 294°

g. 108°

h. 265°

i. 90°

j. 53°

k. 190°

l. 325°

Order the angles into the following groups:

Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle

Draw and Order Angles Answers

Use a protractor to draw each of these angles.

Teacher to correct students drawn angles.

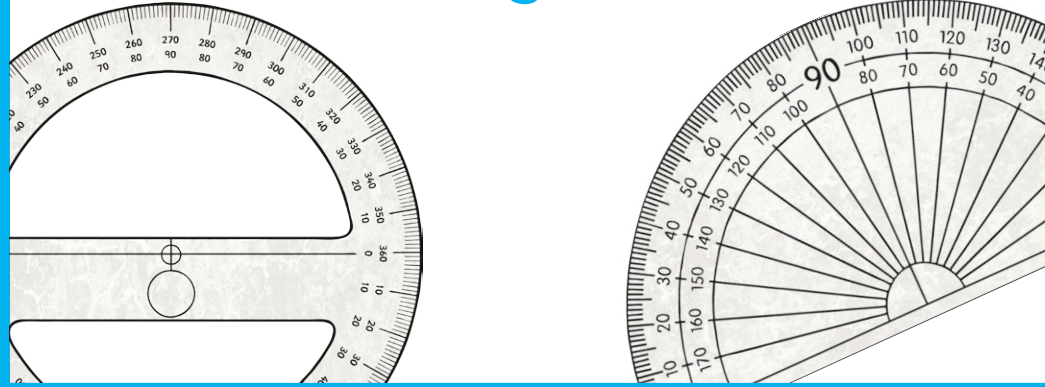
Order the angles into the following groups

★		
Acute Angles	Right Angles	Obtuse Angles
a. 45° f. 20° g. 70° h. 75° k. 75° l. 80°	b. 90°	c. 180° d. 120° e. 145° i. 110° j. 170°

★★				
Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle
a. 65° c. 35° e. 10° g. 5° k. 55°	h. 90°	b. 140° j. 105°	f. 180°	d. 200° i. 250° l. 300°

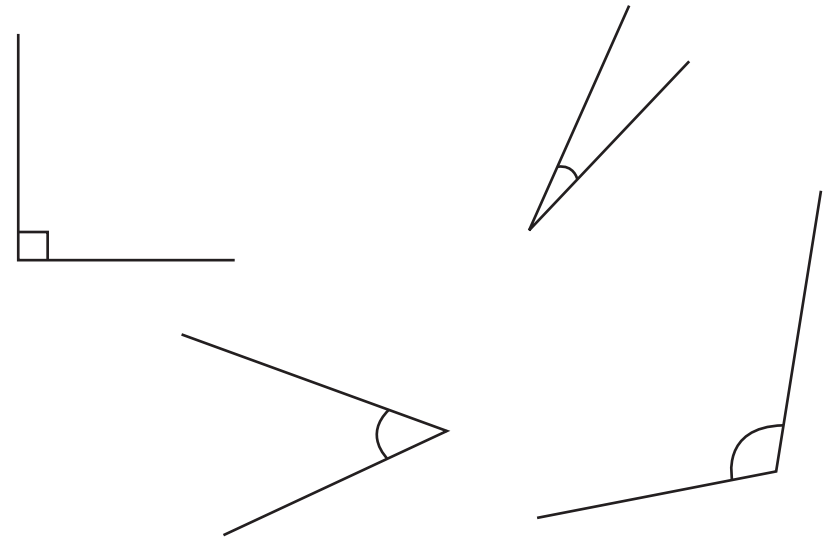
★★★				
Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle
a. 85° c. 22° j. 53°	i. 90°	d. 175° e. 113° g. 108°		b. 350° f. 294° h. 265° k. 190° l. 325°

Angle Challenge Cards



180° Protractor Challenge

1. Measure these angles.



Drawing Angles

2. Draw three different examples of these angles.
Include the size of the angle in degrees!

- obtuse angles
- right angles
- acute angles

Angle Hunt

3. Go on an angle hunt in your classroom to find as many **acute** and **obtuse** angles as you can.

- List all the items and angles that you find.
- Which angle type did you find the majority of within the classroom?

Drawing Angles

4. Draw six different examples of these angles.
Include the size of the angle in degrees!
- reflex angles
 - acute angles

Triangle Angle Challenge

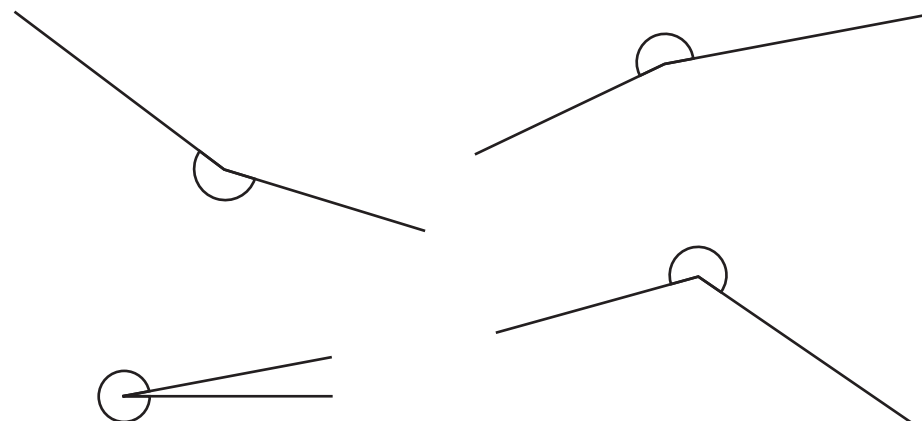
5. Draw four different sized triangles.
Measure and record the size of each internal angle.
Add all of the angles together for each triangle.
What do you notice?

Quadrilateral Angle Challenge

6. Draw four different sized quadrilateral shapes.
Measure and record the size of each internal angle.
Add all the angles together for each shape.
What do you notice?

360° Protractor Challenge

7. Measure these angles.



Drawing Angles

8. Use a protractor to help you draw these angles.

65°

170°

15°

130°

40°

90°

85°

155°

Answers

1. 90°, 20°, 45°, 110°

2. Teacher to correct

3. Teacher to correct

4. Teacher to correct

5. Teacher to correct

6. Teacher to correct

7. 200°, 195°, 350°, 230°

8. Teacher to correct

Angle Illustration

I can construct angles using a protractor. (ACMMG112)

Equipment

- Pencil
- Protractor
- Ruler
- Fine marker
- Coloured pencils

Don't forget

An angle is formed when two straight lines meet at a shared point.

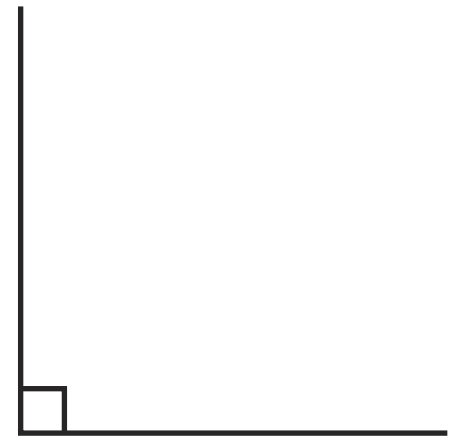
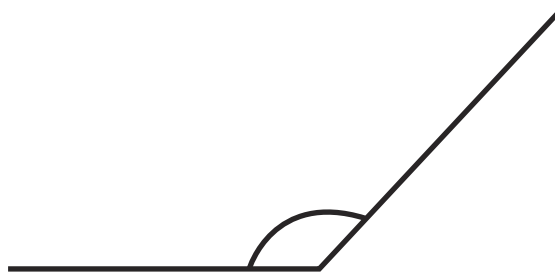
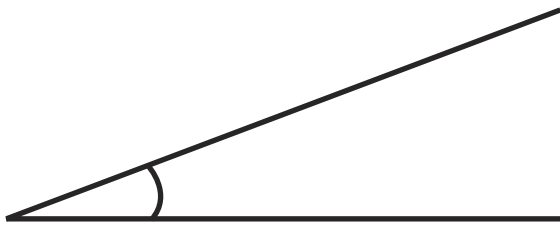
Task

Create an illustration using only angles! It could be a cartoon, a drawing of a house, an illustration of an animal, the possibilities are endless. When you have finished your angle drawing, go over the pencil lines using a fine marker and colour in your illustration.

Acute Angle

Obtuse Angle

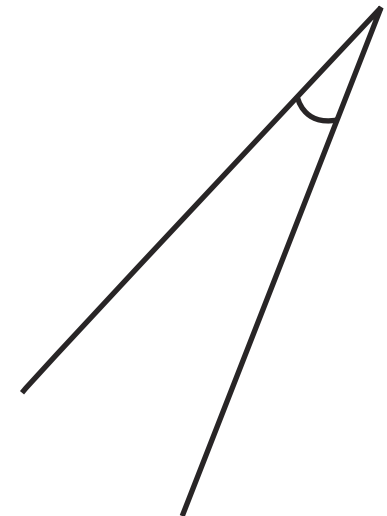
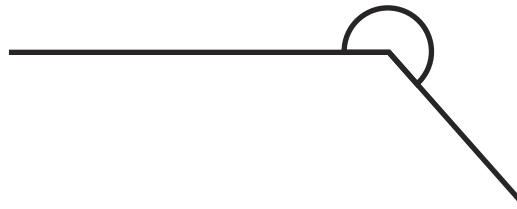
Right Angle



Straight Angle

Reflex Angle

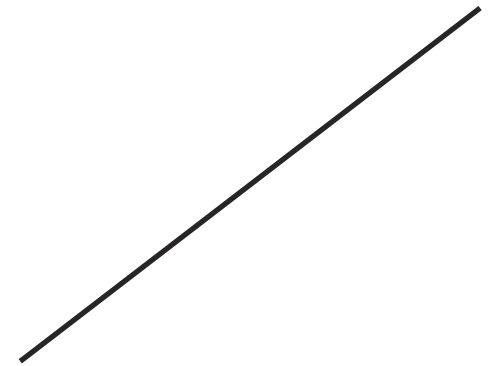
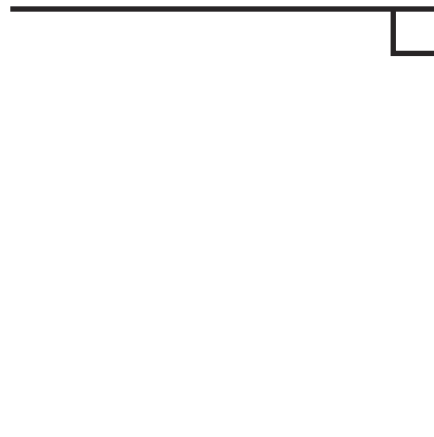
Acute Angle



Obtuse Angle

Right Angle

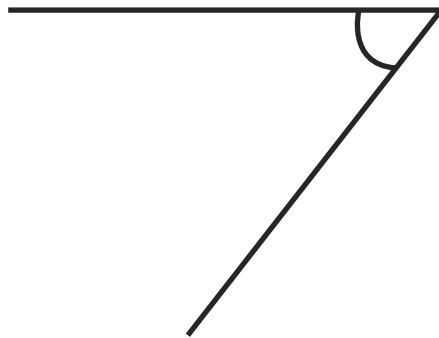
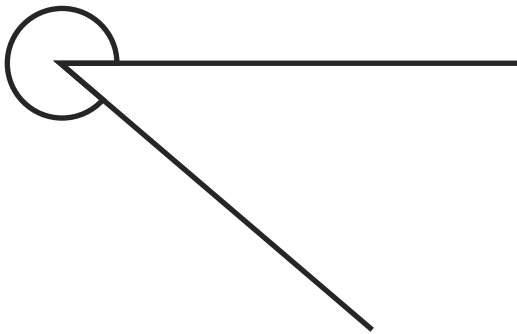
Straight Angle



Reflex Angle

Acute Angle

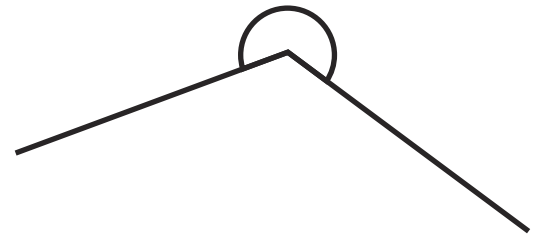
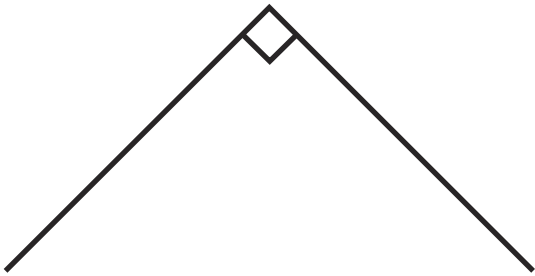
Obtuse Angle



Right Angle

Straight Angle

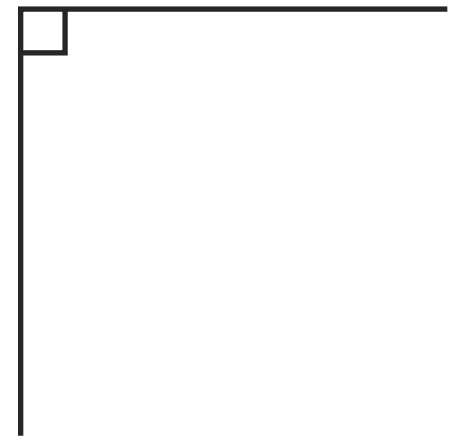
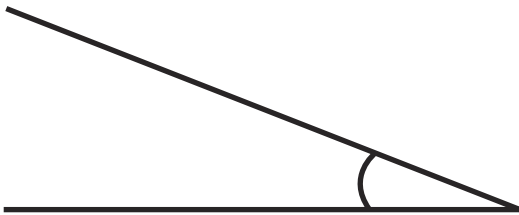
Reflex Angle



Acute Angle

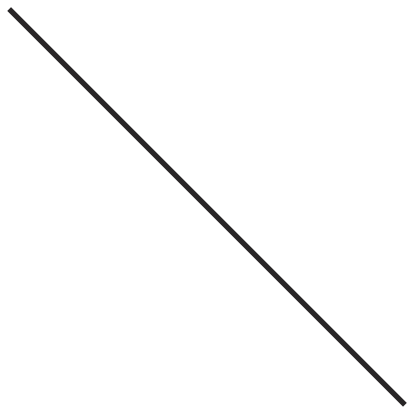
Obtuse Angle

Right Angle



Straight Angle

Reflex Angle



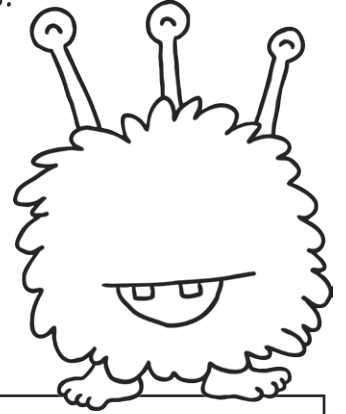
What Is an Angle?

I can explain how an angle is formed. (ACMMG112)

Fuzzle has crash landed onto Earth right into the middle of a maths class on angles. He wants to join in, however, he has absolutely no idea what an angle is!

To help Fuzzle:

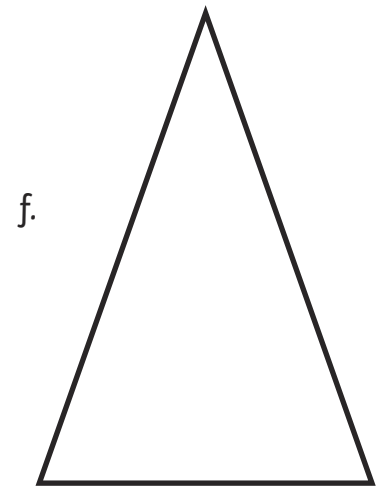
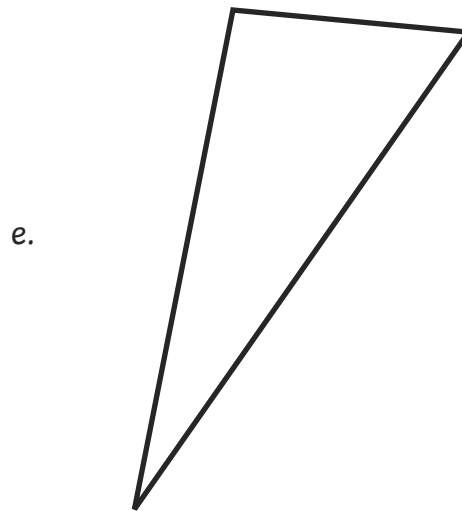
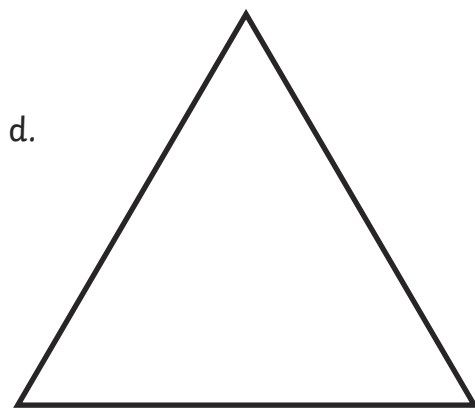
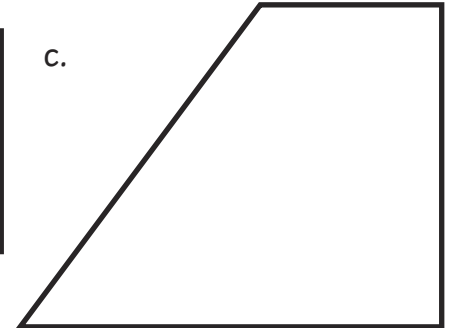
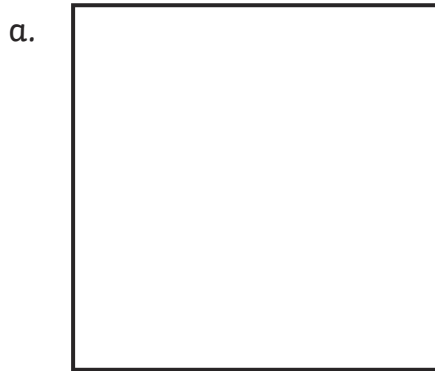
- draw an example of an angle;
- label the parts of an angle;
- write an explanation on how an angle is formed;
- explain how to use a protractor to measure angle sizes.



Measuring Angles in 2D Shapes

I can use a protractor to measure angles in degrees. (ACMMG112)

Use a protractor to measure the angles in each shape.



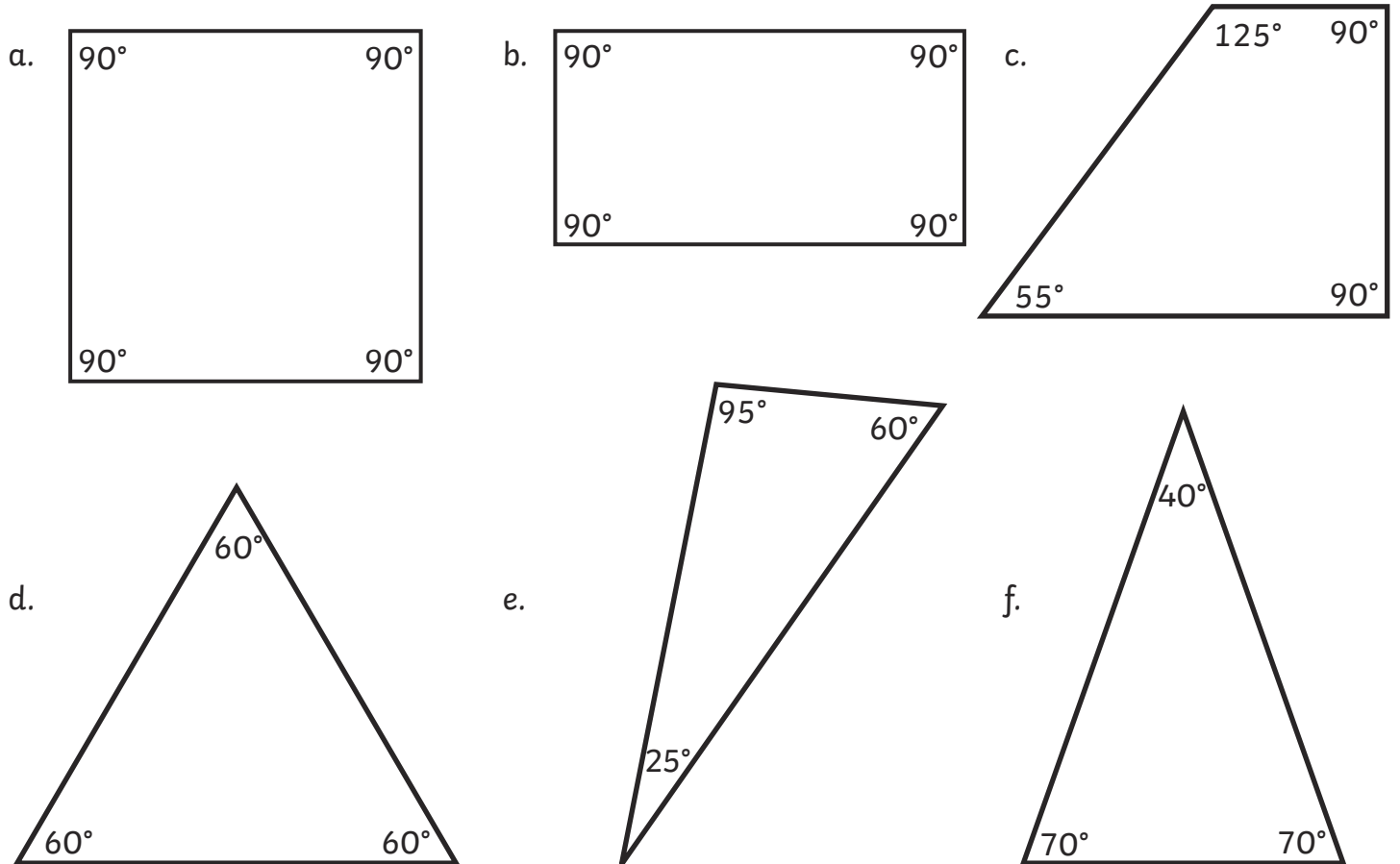
Add the angles together for each shape. The first one has been completed for you.

a.	Square = $90^\circ + 90^\circ + 90^\circ + 90^\circ = 360^\circ$
b.	
c.	
d.	
e.	
f.	

Measuring Angles in 2D Shapes

Answers

Use a protractor to measure the angles in each shape.

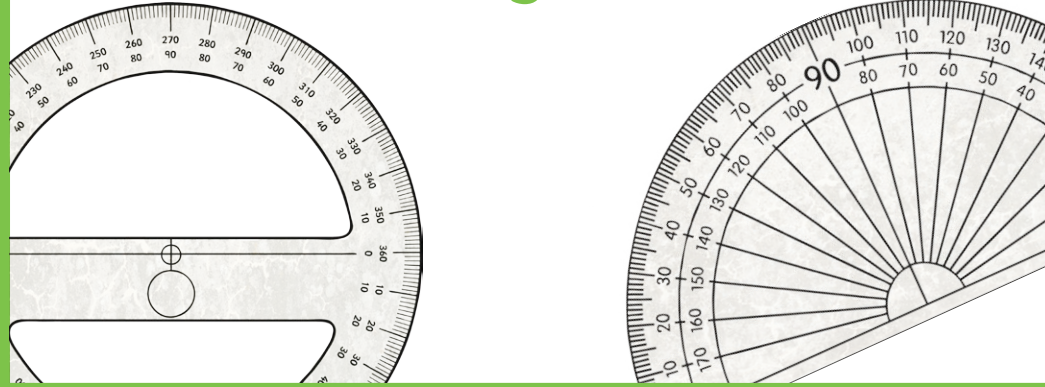


Add the angles together for each shape. The first one has been completed for you.

a.	Square = $90^\circ + 90^\circ + 90^\circ + 90^\circ = \mathbf{360^\circ}$
b.	Rectangle = $90^\circ + 90^\circ + 90^\circ + 90^\circ = \mathbf{360^\circ}$
c.	Quadrilateral = $90^\circ + 90^\circ + 125^\circ + 55^\circ = \mathbf{360^\circ}$
d.	Equilateral triangle = $60^\circ + 60^\circ + 60^\circ = \mathbf{180^\circ}$
e.	Scalene triangle = $95^\circ + 60^\circ + 25^\circ = \mathbf{180^\circ}$
f.	Isosceles triangle = $70^\circ + 70^\circ + 40^\circ = \mathbf{180^\circ}$

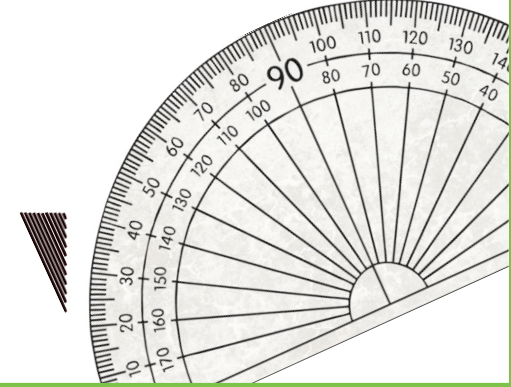
Drawing Angles

Challenge Cards



180° Protractor Challenge

1. Draw and label these angles.
 - a. 80°
 - b. 30°
 - c. 150°
 - d. 125°



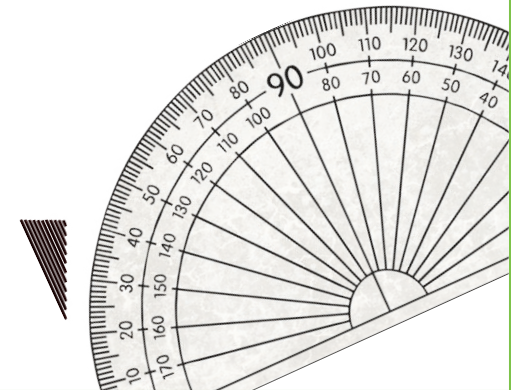
180° Protractor Challenge

2. Draw and label these angles.
 - a. an acute angle
 - b. a straight angle
 - c. an obtuse angle
 - d. a right angle



180° Protractor Challenge

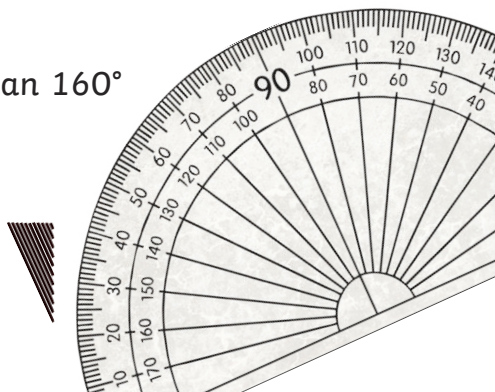
3. Draw and label these angles.
 - a. 175°
 - b. 5°
 - c. 93°
 - d. 74°



180° Protractor Challenge

4. Draw and label these angles.

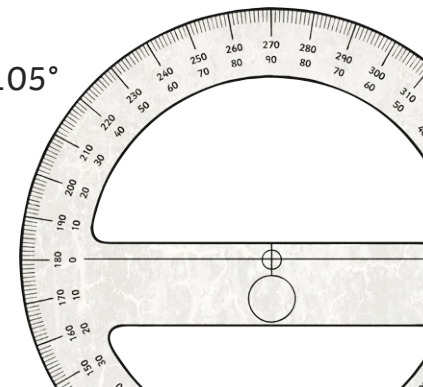
- an obtuse angle less than 160°
- an acute angle less than 40°
- a right angle
- an obtuse angle larger than 160°



360° Protractor Challenge

5. Draw and label these angles.

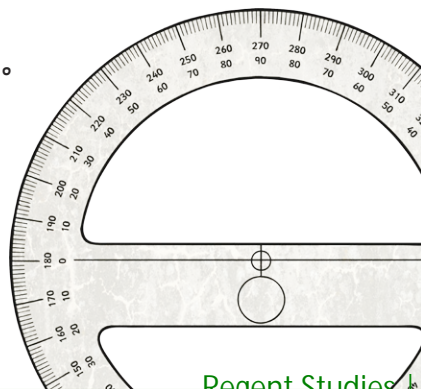
- a reflex angle less than 285°
- an obtuse angle less than 120°
- a straight angle
- an obtuse angle larger than 105°



360° Protractor Challenge

6. Draw and label these angles.

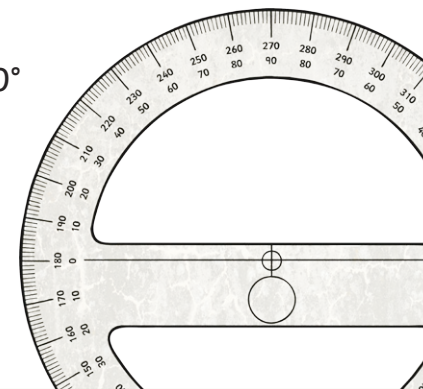
- an acute angle less than 15°
- a reflex angle less than 195°
- a right angle
- a reflex angle larger than 240°



360° Protractor Challenge

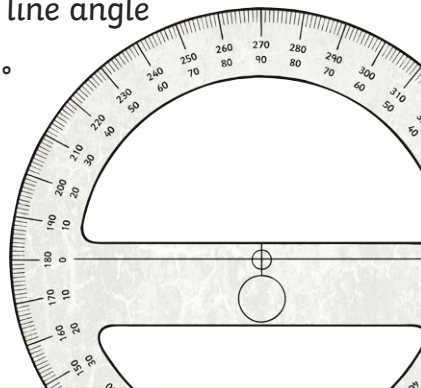
7. Draw and label these angles.

- an obtuse angle less than 160°
- an acute angle less than 85°
- a revolution
- a reflex angle larger than 200°



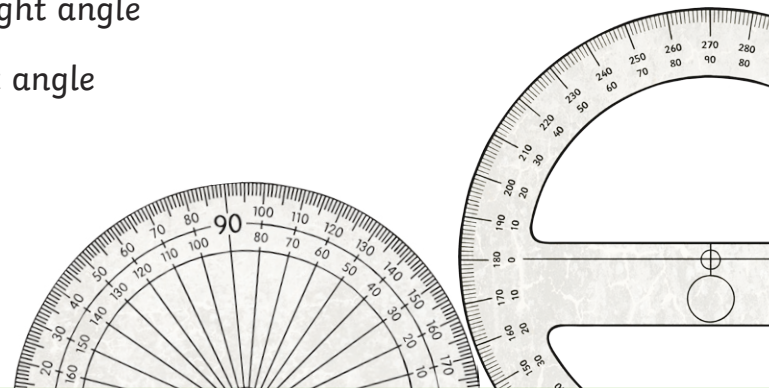
360° Protractor Challenge

8. Draw and label these angles.
 - a. a reflex angle less than 300°
 - b. an acute angle larger than 80°
 - c. an angle larger than a straight line angle
 - d. a reflex angle larger than 300°



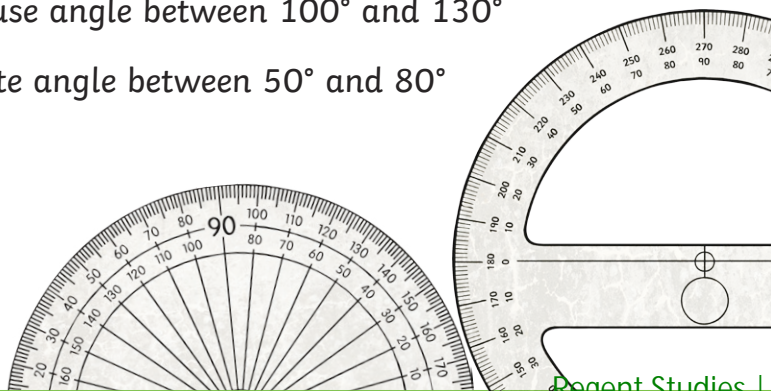
Protractor Challenge

9. Draw and label these angles.
 - a. a reflex angle
 - b. an obtuse angle
 - c. a straight angle
 - d. a right angle



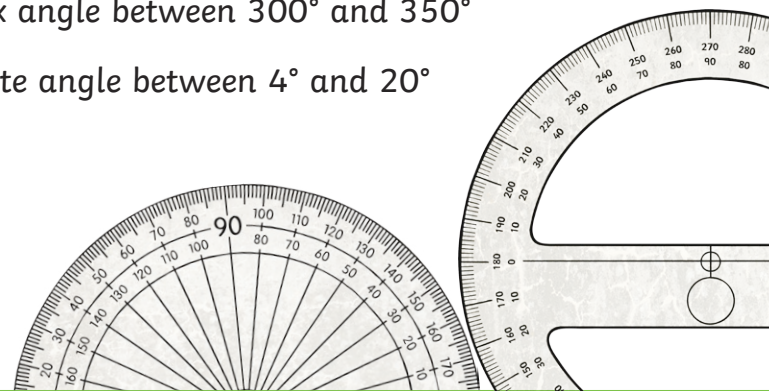
Protractor Challenge

10. Draw and label these angles.
 - a. an acute angle between 15° and 45°
 - b. an obtuse angle between 95° and 120°
 - c. an obtuse angle between 100° and 130°
 - d. an acute angle between 50° and 80°



Protractor Challenge

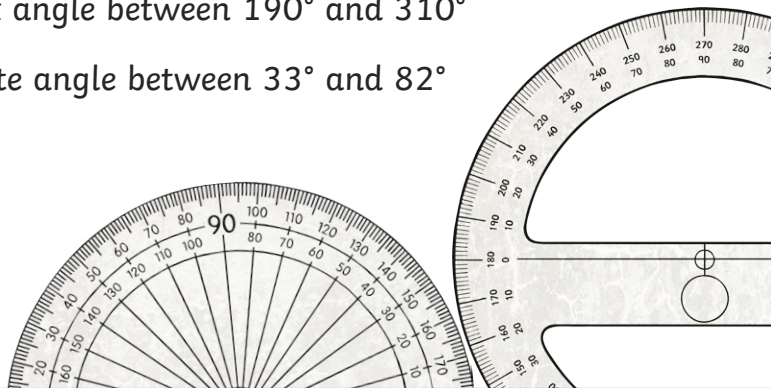
11. Draw and label these angles.
 - a. a reflex angle between 195° and 250°
 - b. an obtuse angle between 105° and 170°
 - c. a reflex angle between 300° and 350°
 - d. an acute angle between 4° and 20°



Protractor Challenge

12. Draw and label these angles.

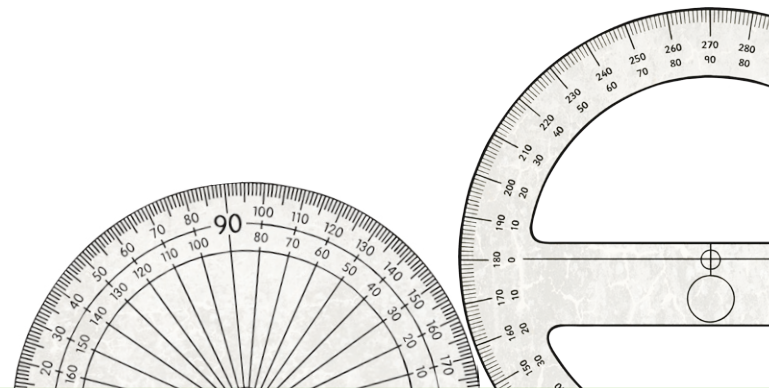
- a. an obtuse angle between 160° and 178°
- b. a reflex angle between 305° and 350°
- c. a reflex angle between 190° and 310°
- d. an acute angle between 33° and 82°



Protractor Challenge

13. Draw and label these angles.

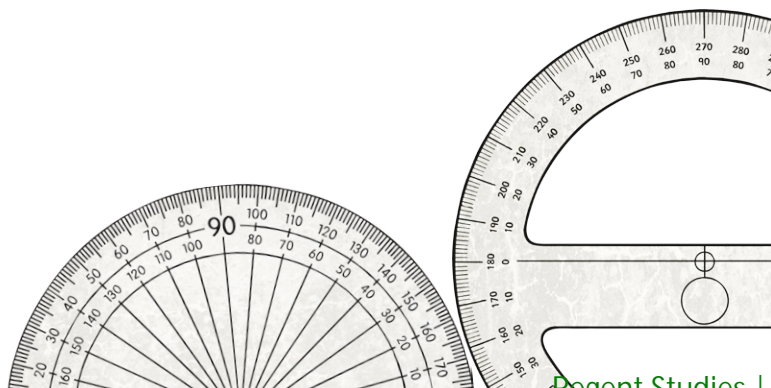
- a. 200°
- b. 300°
- c. 180°
- d. 360°



Protractor Challenge

14. Draw and label these angles.

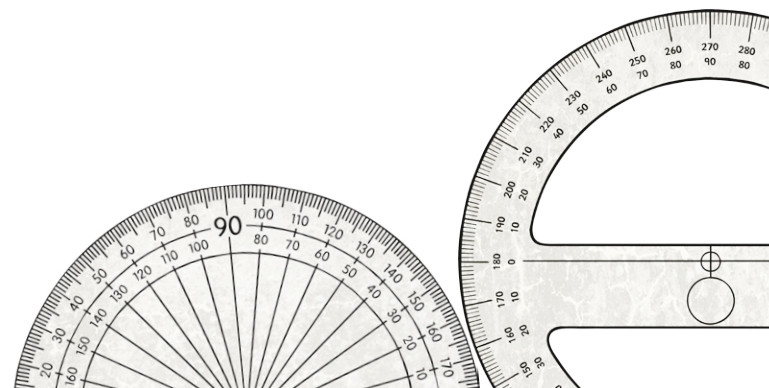
- a. 340°
- b. 84°
- c. 176°
- d. 215°



Protractor Challenge

15. Draw and label these angles.

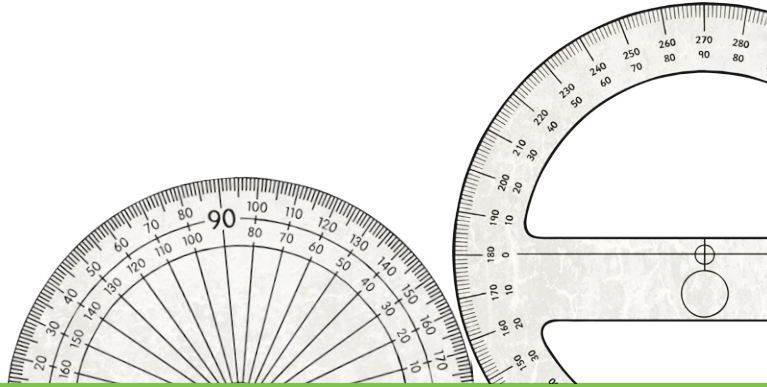
- a. 103°
- b. 171°
- c. 280°
- d. 318°



Protractor Challenge

16. Draw and label these angles.

- a. 22°
- b. 307°
- c. 99°
- d. 358°



Teacher/Lesson Information

This open-ended task can be used at the introduction of the topic, during explicit teaching or as an assessment item at the end of the teaching/learning cycle.

Learning Task: Students are required to construct a shape that has at least one angle measuring 100° .

The open-ended lesson is generally broken into the below format:

- As a whole class spend five minutes introducing the task (read through the question/problem and identify important information, discuss time for completing the task and how to work in the zone of confusion/get out of the pit).
- Students work for 5 minutes independently in the 'zone of confusion' (tackling the task by themselves, using 'tools' to get out of the 'pit').
- Students can seek 'four before me' and workshop ideas with peers whilst working for a further 15 minutes on the task.
- During students' working time, the teacher moves around the room offering support and posing questions to students to gain a deeper understanding of their knowledge of the topic being covered.
- The class are then brought back together where some students' work is projected on the whiteboard and discussed (with the use of a visualiser/camera/interactive whiteboard or drawn on the board by the student). Student samples are carefully chosen to demonstrate growth in learning and a variety of possible methods to complete the problem. Students are given the opportunity to explain their patterns.

Students will complete the above task without the use of technology. Students will include all angle sizes.

Answer:

This will differ from student to student.

Students are required to have a completed 2D shape with at least one angle measuring 100° .

Students are required to use a protractor to measure and record the sizes of all of the shapes angles.

All angle sizes are to be recorded.

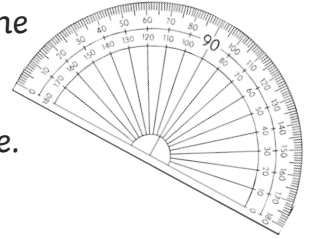
Drawing Angles

I can construct angles using a protractor. (ACMMG112)

Sam started to draw a shape but became distracted and only completed the first two lines! The lines that he has drawn make an angle size of 100° .

Draw the angle that Sam started with and then draw the rest of the shape.

Measure and record the sizes of all of the shapes angles.



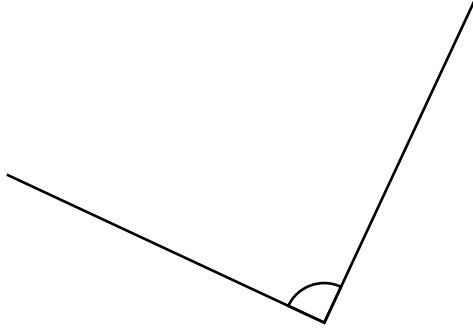
A large empty rectangular box for drawing the shape and measuring its angles.

Measure and Order Angles

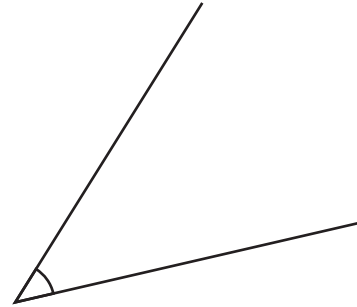
I can measure and compare angles using degrees. (ACMMG112)

Use a protractor to measure each angle.

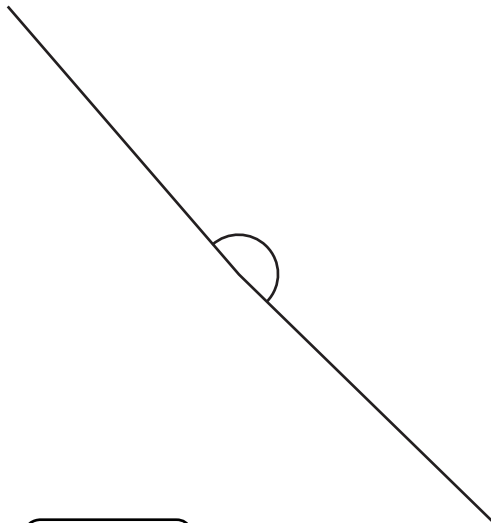
a.



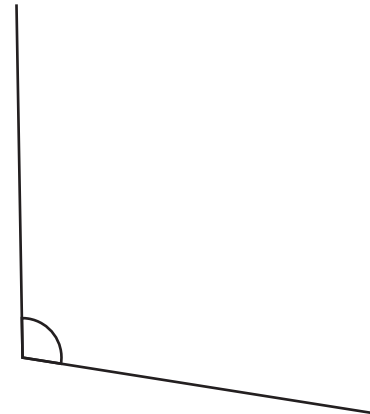
b.



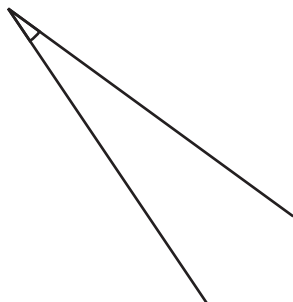
c.



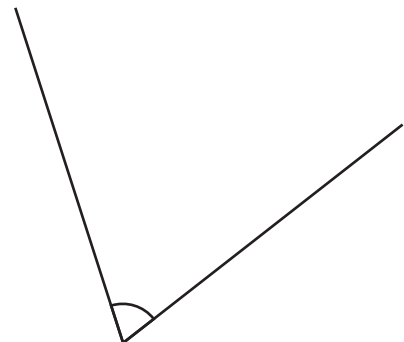
d.



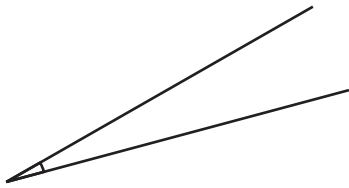
e.



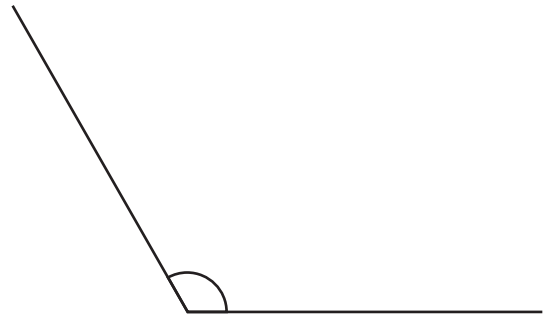
f.



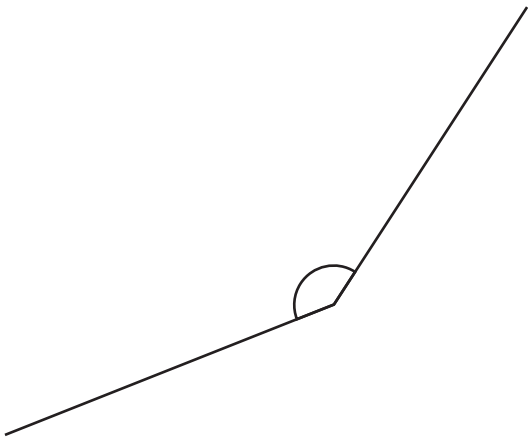
g. °



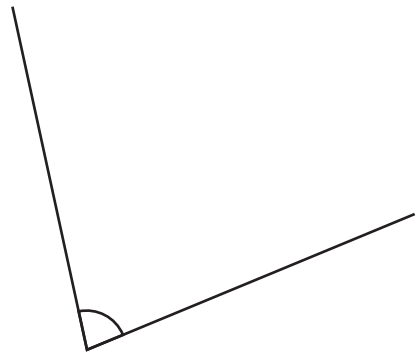
h. °



i. °



j. °



Order the angles from smallest to largest.

Smallest Angle _____ Largest Angle

Measure and Order Angles **Answers**

- a. 90°
- b. 45°
- c. 175°
- d. 100°
- e. 20°
- f. 70°
- g. 10°
- h. 120°
- i. 145°
- j. 80°

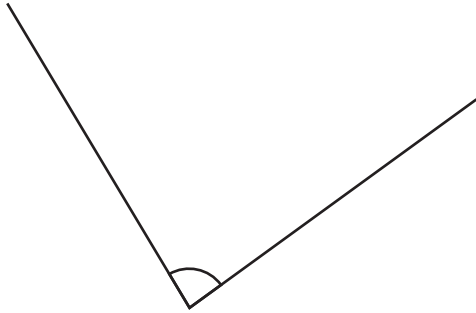
Smallest Angle 10° , 20° , 45° , 70° , 80° , 90° , 100° , 120° , 145° , 175° Largest Angle

Measure and Order Angles

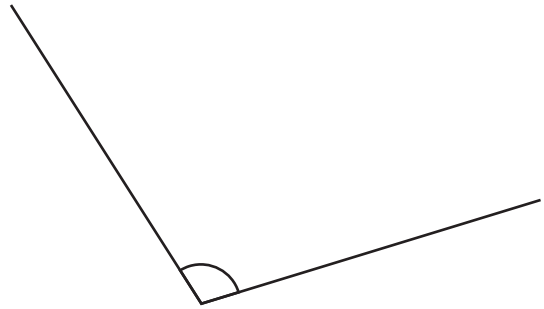
I can measure and compare angles using degrees. (ACMMG112)

Use a protractor to measure each angle.

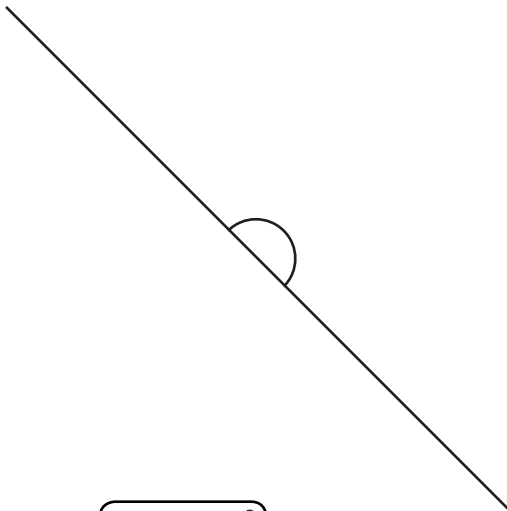
a. °



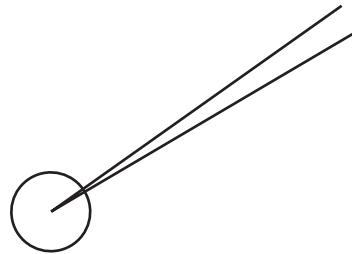
b. °



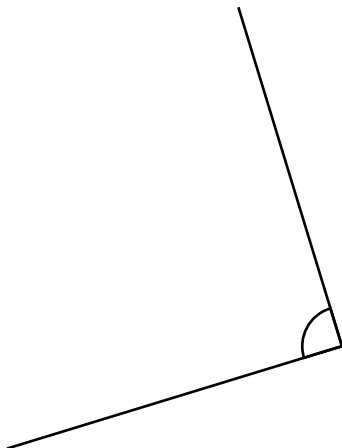
c. °



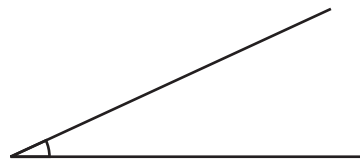
d. °



e. °

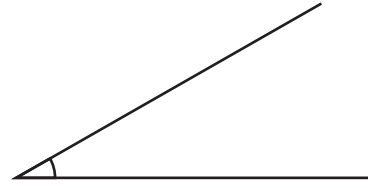
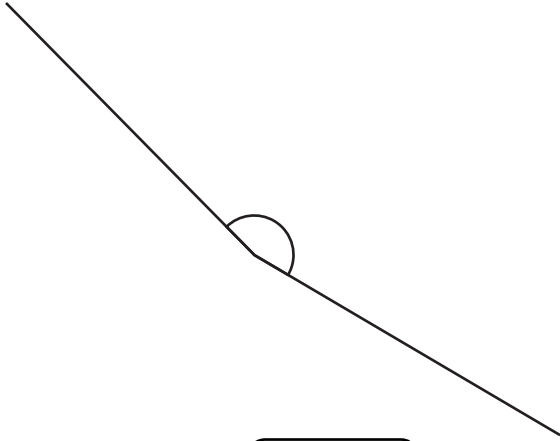


f. °



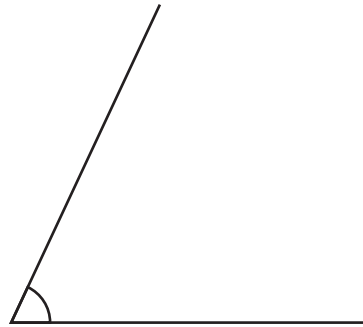
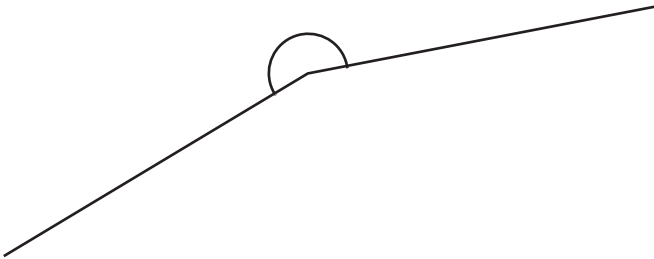
g. °

h. °



i. °

j. °



Sort the angles into the table by type.

Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle

Measure and Order Angles **Answers**

- a. 85°
- b. 105°
- c. 180°
- d. 5°
- e. 90°
- f. 25°
- g. 165°
- h. 30°
- i. 200°
- j. 65°

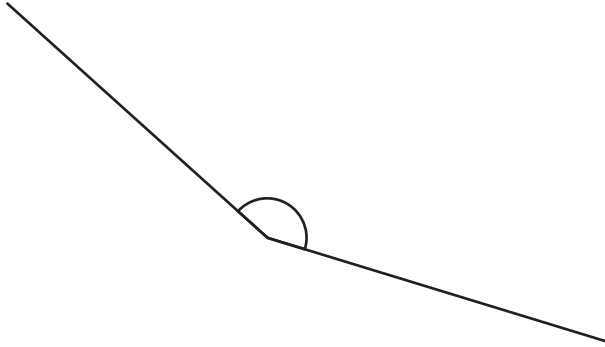
Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle
5° 25° 30° 65° 85°	90°	106° 165°	180°	200°

Measure and Order Angles

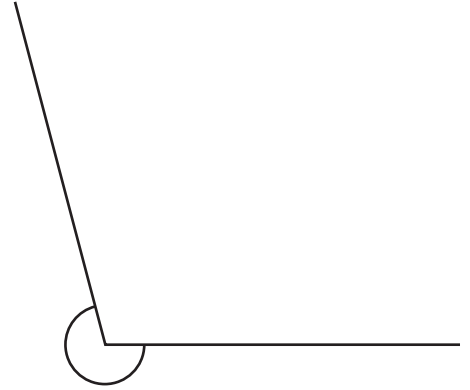
I can measure and compare angles using degrees. (ACMMG112)

Use a protractor to measure each angle.

a. °



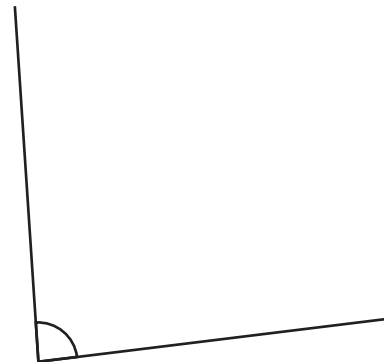
b. °



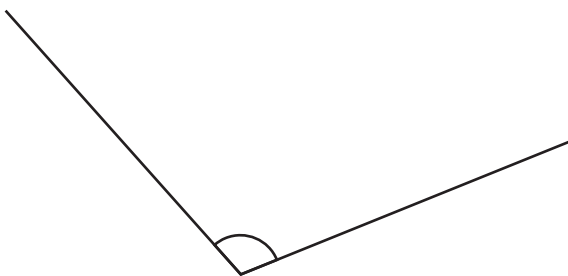
c. °



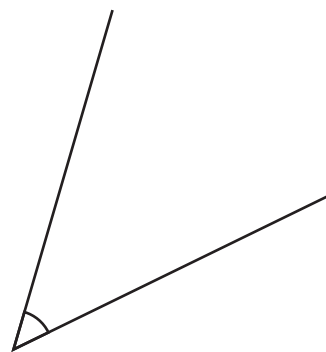
d. °



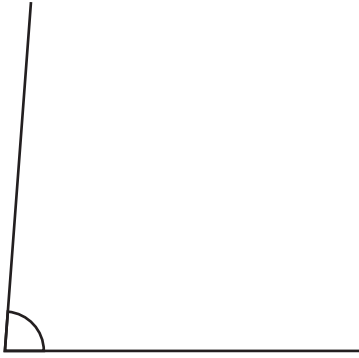
e.



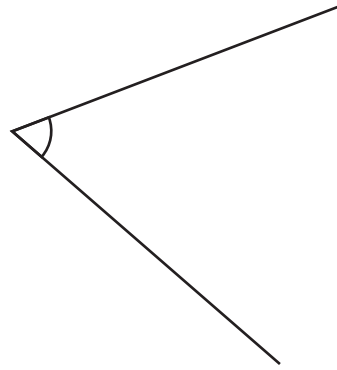
f.



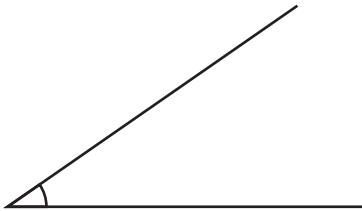
g. °



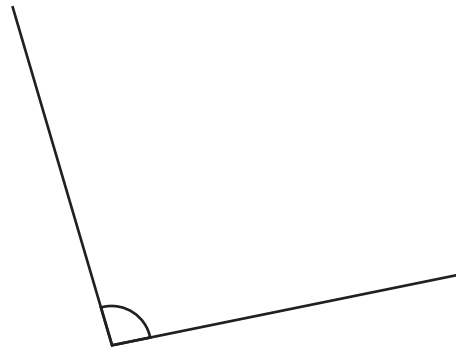
h. °



i. °



j. °



Sort the angles into the table by type.

Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle

Measure and Order Angles **Answers**

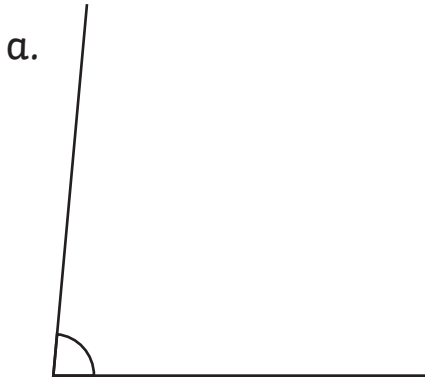
- a. 155°
- b. 255°
- c. 14°
- d. 87°
- e. 250°
- f. 48°
- g. 106°
- h. 62°
- i. 35°
- j. 95°

Acute Angles	Right Angles	Obtuse Angles	Straight Angle	Reflex Angle
14° 35° 48° 62° 87°		95° 106° 155°		225° 250°

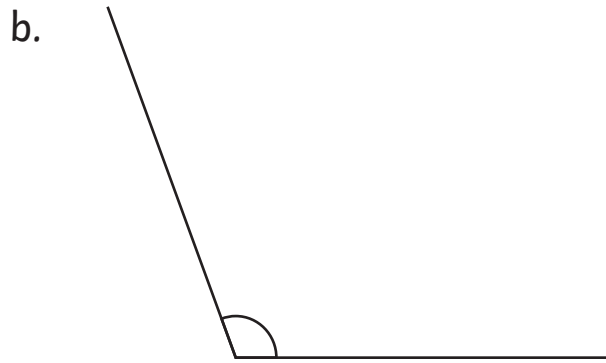
Estimate Angle Size

I can estimate the size of angles using degrees. (ACMMG112)

Look at each angle and choose whether it is acute, obtuse or a right angle.

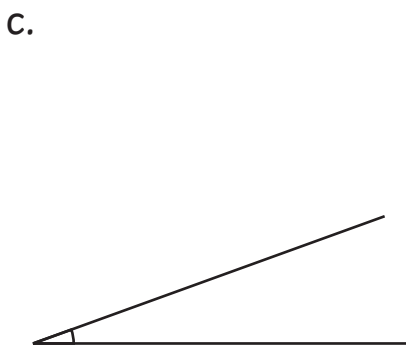


- Acute angle
- Right angle
- Obtuse angle

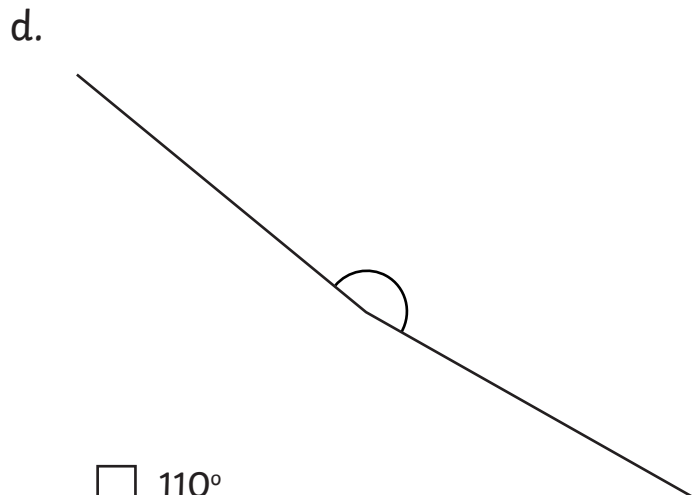


- Acute angle
- Right angle
- Obtuse angle

Look at each angle and tick the closest size estimate.

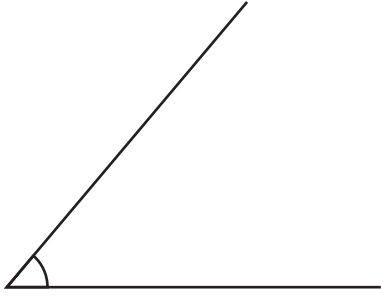


- 50°
- 25°
- 10°



- 110°
- 150°
- 180°

e.



55°

65°

40°

Draw an example of each angle type.

Acute Angle	Right Angle	Obtuse Angle

Estimate Angle Size Answers

- a.
- Acute angle
 - Right angle
 - Obtuse angle

- b.
- Acute angle
 - Right angle
 - Obtuse angle

- c.
- 50°
 - 25°
 - 10°

- d.
- 110°
 - 150°
 - 180°

- e.
- 55°
 - 65°
 - 40°

Estimate Angle Size

I can estimate the size of angles using degrees. (ACMMG112)

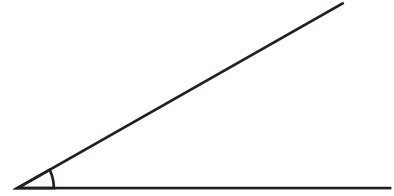
Look at each angle and choose whether it is acute, obtuse or a right angle.

a.



- Acute angle
- Right angle
- Obtuse angle

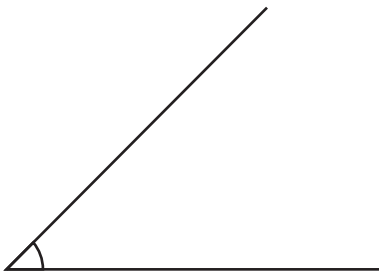
b.



- Acute angle
- Right angle
- Obtuse angle

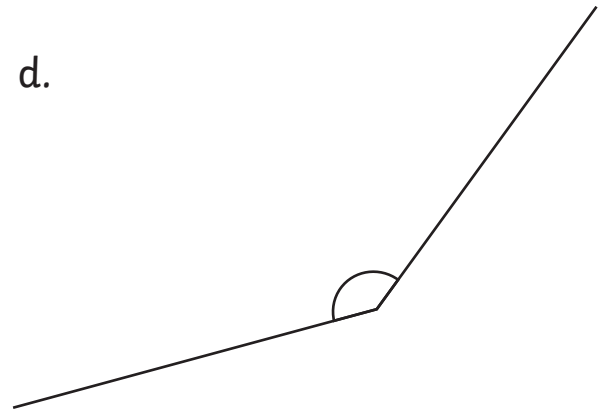
Look at each angle and tick the closest size estimate.

c.



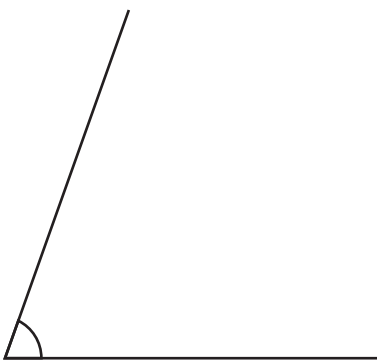
- 50°
- 70°
- 20°

d.



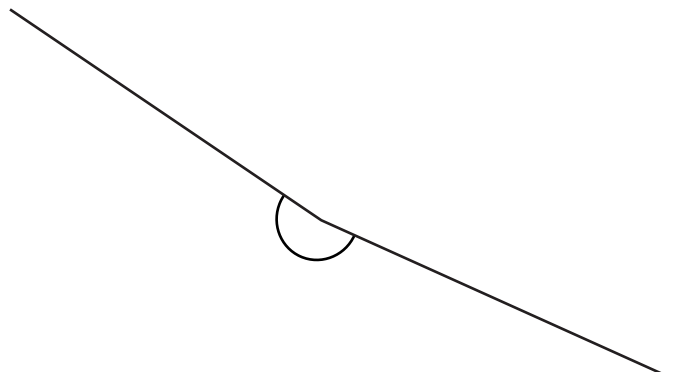
- 140°
- 90°
- 105°

e.



- 55°
- 65°
- 85°

f.



- 190°
- 210°
- 250°

Draw two examples of each angle type.

Acute Angle	Right Angle	Obtuse Angle

Estimate Angle Size Answers

- a.
- Acute angle
 - Right angle
 - Obtuse angle

- b.
- Acute angle
 - Right angle
 - Obtuse angle

- c.
- 50°
 - 70°
 - 20°

- d.
- 140°
 - 90°
 - 105°

- e.
- 55°
 - 65°
 - 85°

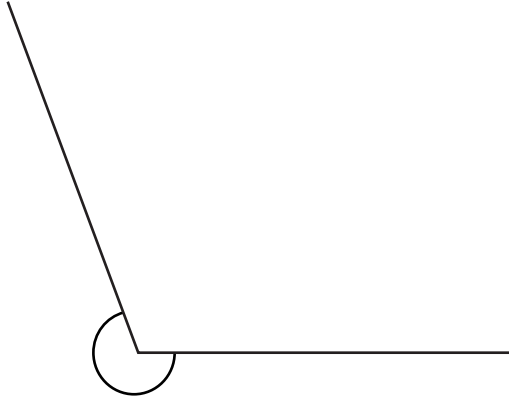
- f.
- 190°
 - 210°
 - 250°

Estimate Angle Size

I can estimate the size of angles using degrees. (ACMMG112)

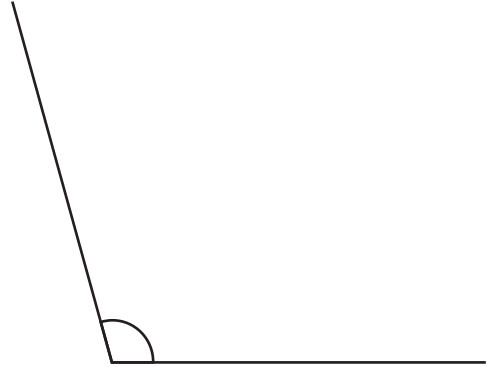
Look at each angle and choose whether it is acute, obtuse or a right angle.

a.



- Acute angle
- Reflex angle
- Obtuse angle

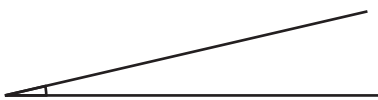
b.



- Obtuse angle
- Acute angle
- Reflex angle

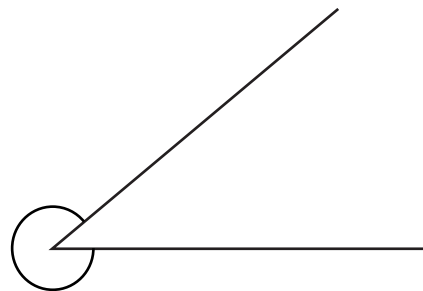
Look at each angle and tick the closest size estimate.

c.



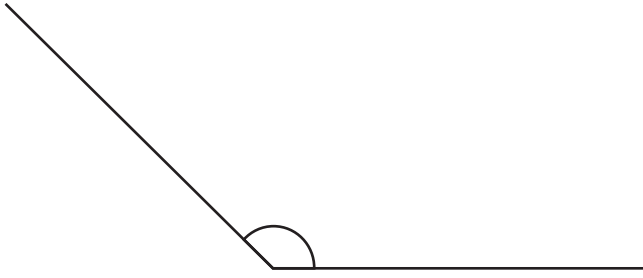
- 5°
- 20°
- 10°

d.



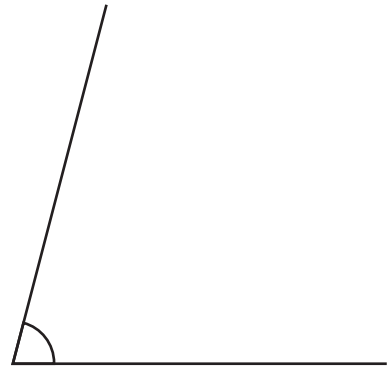
- 300°
- 200°
- 330°

e.



- 100° 130° 150°

f.



- 70° 60° 85°

Draw two examples of each angle type.

Acute Angle	Right Angle	Obtuse Angle	Reflex Angle

Estimate Angle Size Answers

- a.
- Acute angle
 - Reflex angle
 - Obtuse angle

- b.
- Obtuse angle
 - Acute angle
 - Reflex angle

- c.
- 5°
 - 20°
 - 10°

- d.
- 300°
 - 200°
 - 330°

- e.
- 100°
 - 130°
 - 150°

- f.
- 70°
 - 60°
 - 85°