

















Properties of Shapes: Measuring Acute Angles

<p>Aim Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. Draw given angles, and measure them in degrees.</p> <p>DfE Ready-to-Progress Criteria Compare angles, estimate and measure angles in degrees and draw angles of a given size (5G-1).</p> <p>To measure acute angles in degrees.</p>	<p>Success Criteria I can read acute angles shown on a protractor. I can use a protractor to accurately measure angles less than 90 degrees. I can read both the inside and outside scale of the protractor accurately.</p>	<p>Resources Lesson Pack Protractors</p>
	<p>Key/New Words Protractor, angle, turn, degrees, acute, right, clockwise, anticlockwise.</p>	<p>Preparation Differentiated Measuring Acute Angles Activity Sheets – one per child Diving into Mastery Activity Sheets – as required</p>

Prior Learning	It will be helpful if children can measure angles of a turn in degrees. This is covered in Measuring Angles in Degrees
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Learning Sequence

	<p>Remember It: Using the corresponding slide on the Lesson Presentation, the children use their reasoning skills to identify which of the five angles shown are acute. They are then challenged to draw three more acute angles on their whiteboard. Can the children identify that an angle less than a right angle is acute?</p>	
	<p>The Protractor: Using the corresponding slides on the Lesson Presentation, the children are introduced to the protractor as a tool to measure acute angles in degrees. Visual animations are used to guide the children through the correct way to use the protractor, and an emphasis is placed on how to use both the clockwise and anticlockwise scales. Can the children read acute angles shown on a protractor? Can the children read both the inside and outside scale of the protractor accurately?</p>	
	<p>Reasoning: Using the corresponding slides on the Lesson Presentation, the children answer three reasoning questions about reading acute angles on a protractor, applying their learning from the previous section. Can the children solve reasoning questions about reading acute angles on a protractor?</p>	
	<p>Measuring Acute Angles: The children complete the differentiated Measuring Acute Angles Activity Sheets.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  Children working towards expected level read and measure angles to five degrees. </div> <div style="text-align: center;">  Children working at expected level read and measure angles to one degree. </div> <div style="text-align: center;">  Children working at greater depth use a pencil and ruler to draw acute angles which they estimate, then use a protractor to measure accurately. </div> </div>	
	<p>Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.</p> <ul style="list-style-type: none">  Children complete fluency questions related to measuring acute angles in degrees.  Children answer reasoning questions related to measuring acute angles in degrees.  Children work individually or collaboratively on problem-solving questions related to measuring acute angles in degrees. 	

<p>Exploreit Learnit: Children will find this super helpful to support their understanding of measuring angles.</p>

DISCLAIMER

We hope you find the information on our website and resources useful.

Displaying the Presentation

To ensure this presentation displays correctly: If you are a Mac user, the presentation may open in 'slide master' mode - to see all the content, click 'close slide master' and the presentation should display correctly. If you are using Google Drive, the presentation won't display correctly if you open it in Google Slides. If you have opened it in Google Slides, you will need to download it again from the Twinkl website and this time open it from your computer.

Animations

This resource has been designed with animations to make it as fun and engaging as possible. To view the content in the correct formatting, please view the PowerPoint in 'slide show mode'. This takes you from desktop to presentation mode. If you view the slides out of 'slide show mode', you may find that some of the text and images overlap each other and/or are difficult to read.

To enter slide show mode, go to the **slide show menu tab** and select either **from beginning** or **from current slide**.

You may wish to delete this slide before beginning the presentation.



Maths

Properties of Shapes

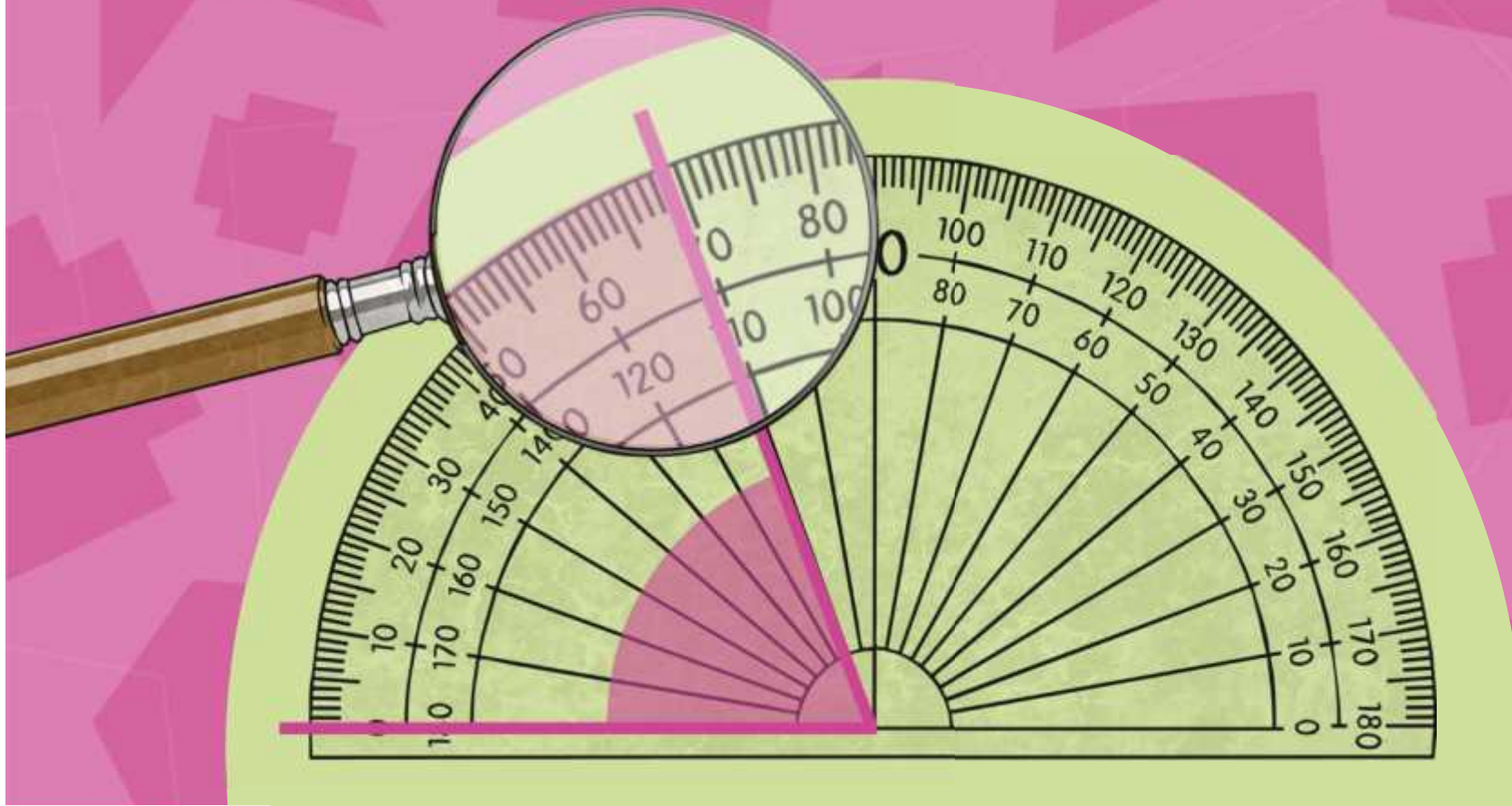
Aim

- To measure acute angles in degrees.

Success Criteria

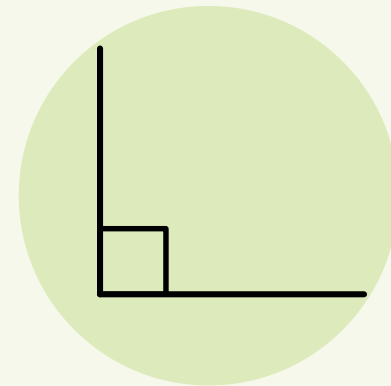
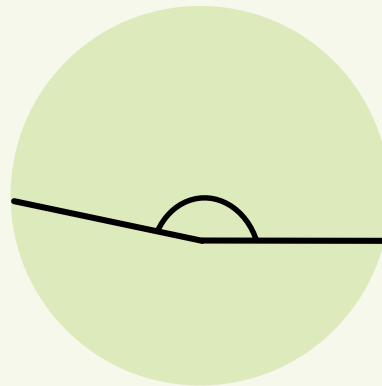
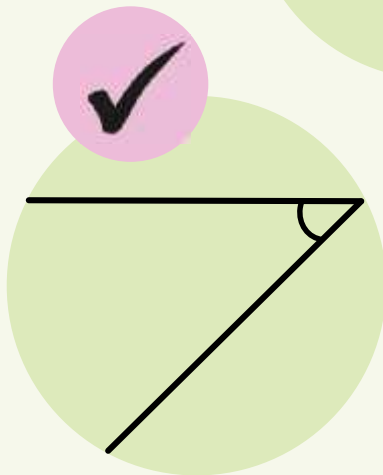
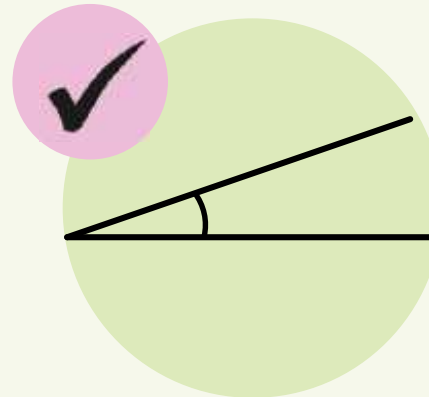
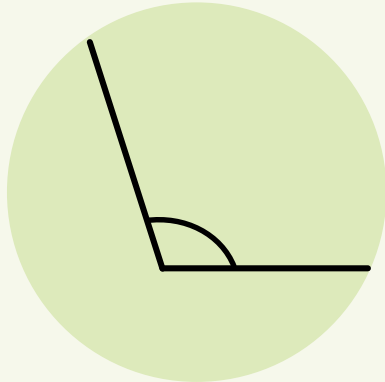
- I can read acute angles shown on a protractor.
- I can use a protractor to accurately measure angles less than 90 degrees.
- I can read both the inside and outside scale of the protractor accurately.

Measuring Acute Angles



Remember It

Which of these angles are acute? Explain your reasoning.

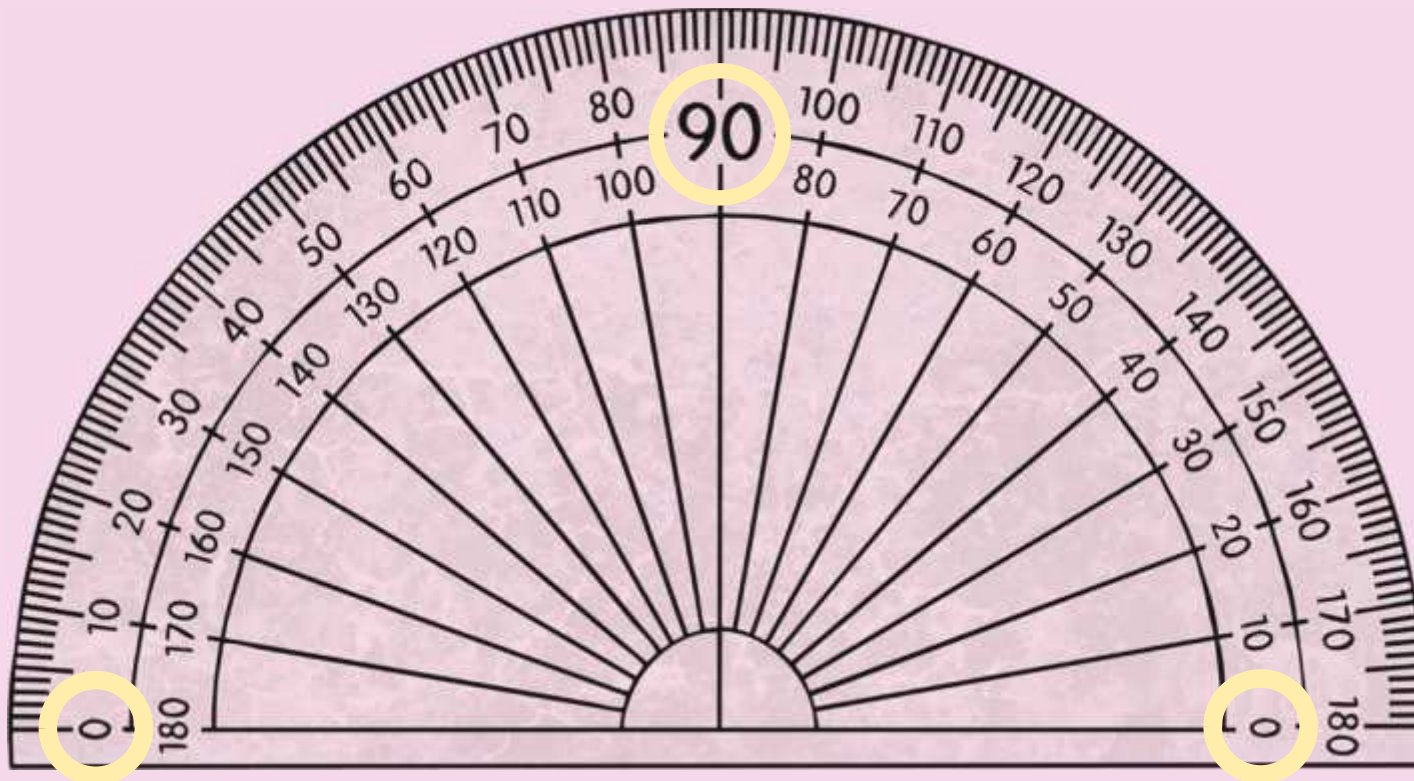


Challenge: Can you draw three more acute angles on your whiteboard?

The Protractor

We can use a protractor (angle measurer) to measure acute angles.

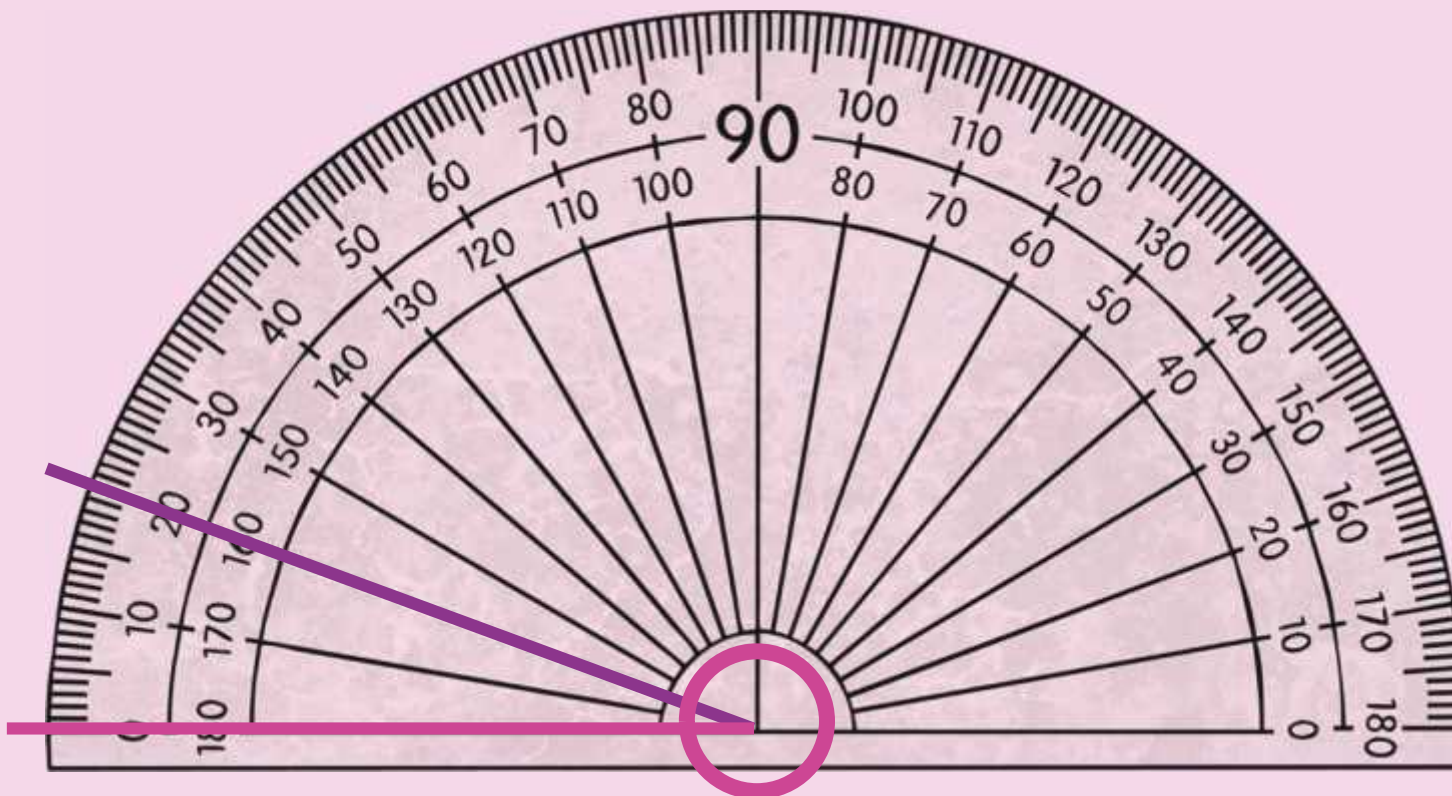
Look carefully at how the numbers on the scale count from 0° to 90° in both directions.



The Protractor

Here is an angle.

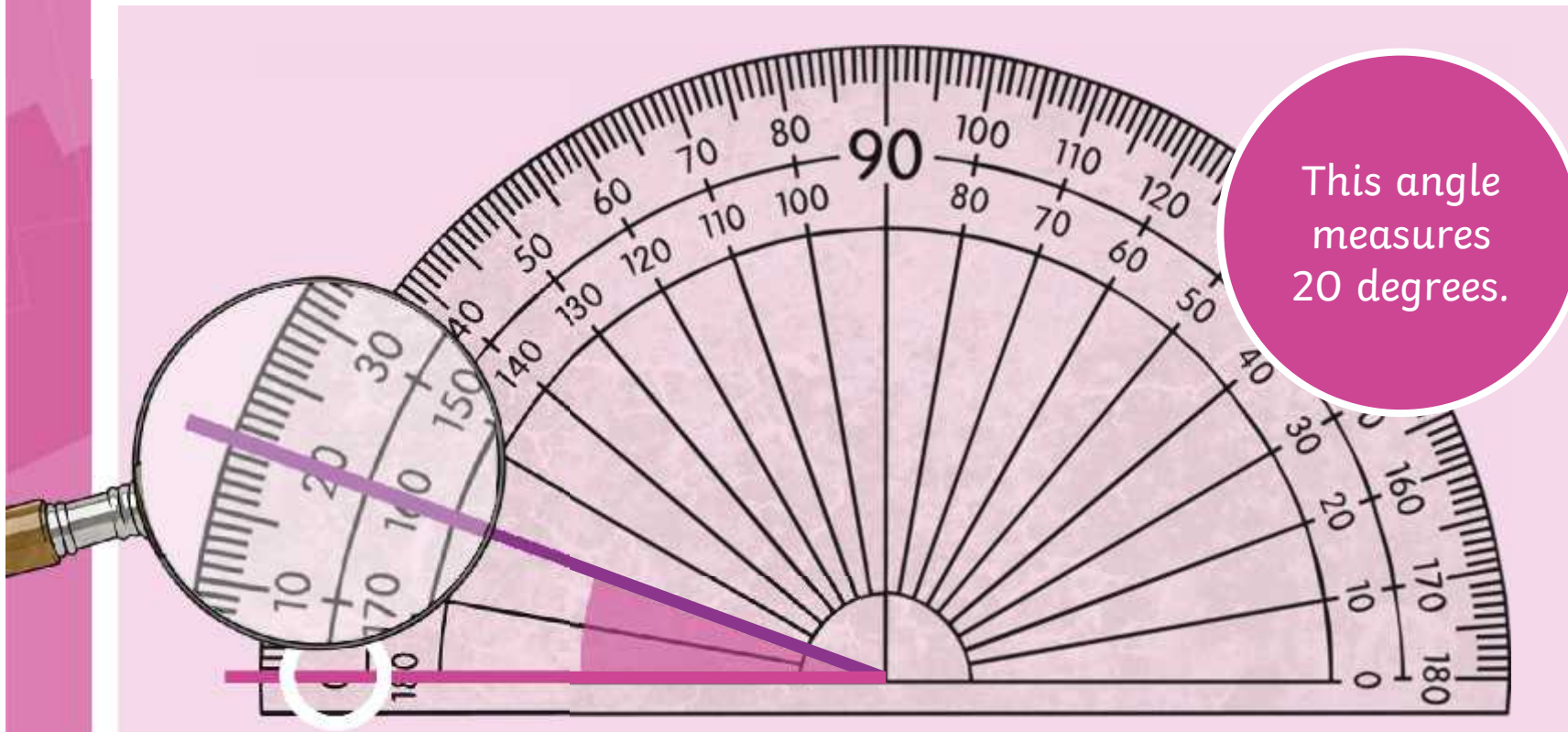
To measure the angle in degrees, we line the centre of the protractor up with the vertex of the angle. One of the angle lines needs to be lined up with the base of the protractor.



The Protractor

This angle is facing the left side of the protractor, so we count along the outside scale clockwise.

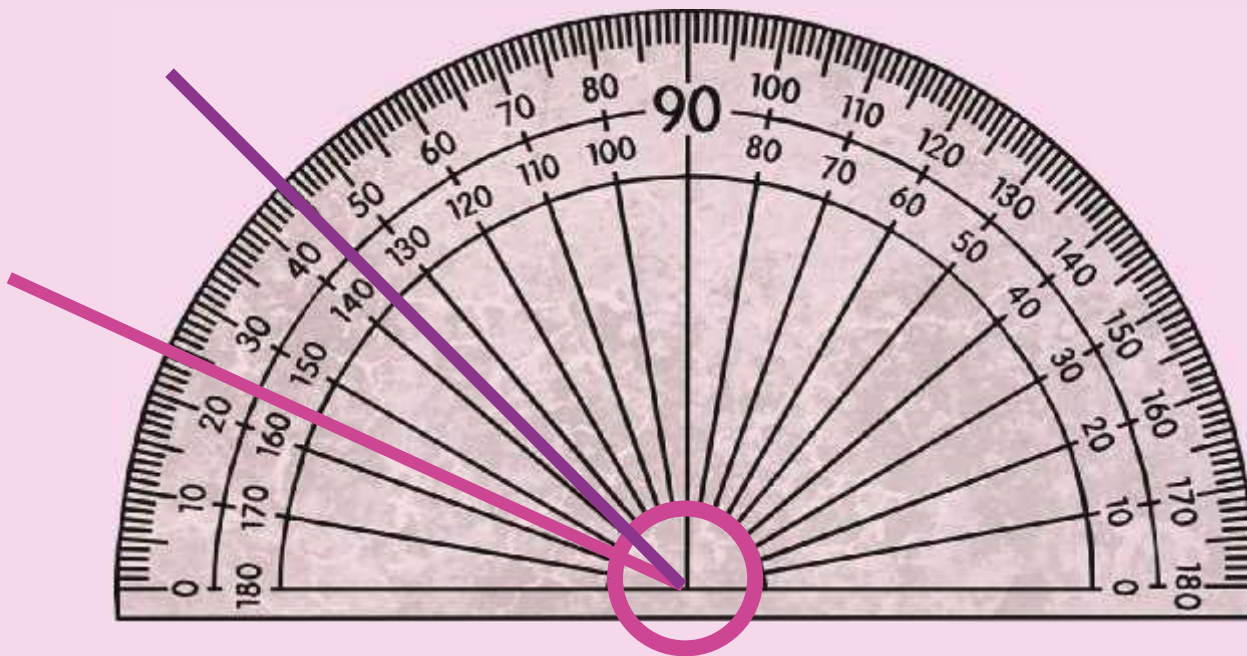
To find out how many degrees the angle measures, we look at where the purple line of the angle is pointing to on the scale.



The Protractor

Remember: the bottom line of the angle needs to be lined up with the base of the protractor.

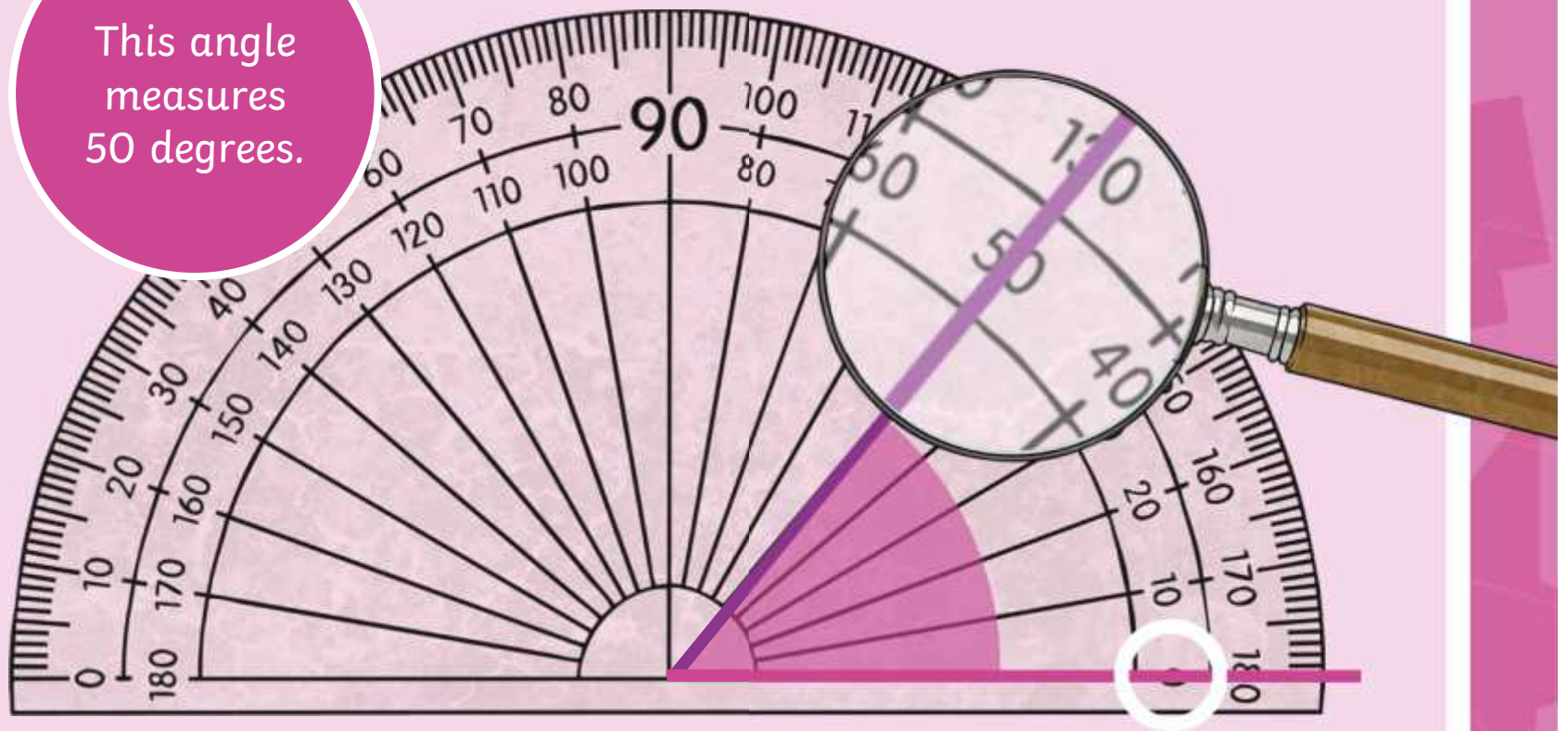
We can tilt the protractor to line it up...



The Protractor

This angle is facing the right side of the protractor, so we count along the inside scale, anticlockwise.

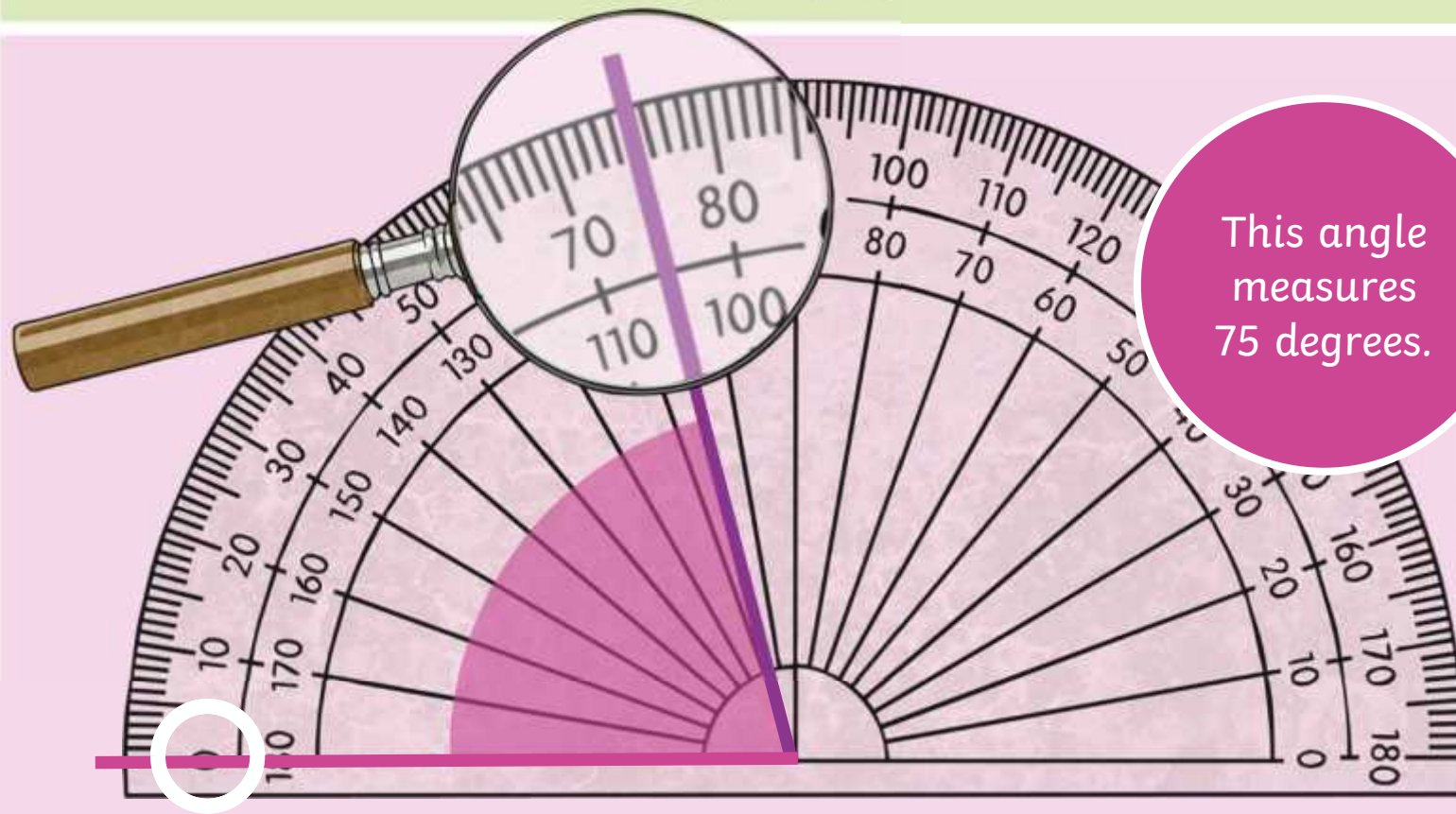
This angle measures 50 degrees.



The Protractor

This angle measures halfway between the marked intervals on the scale. How many degrees does the angle measure? Explain your reasoning.

Multiples of 10 degrees are labelled. Multiples of 5 are shown by the longer increments that are unlabelled, halfway between the multiples of 10.

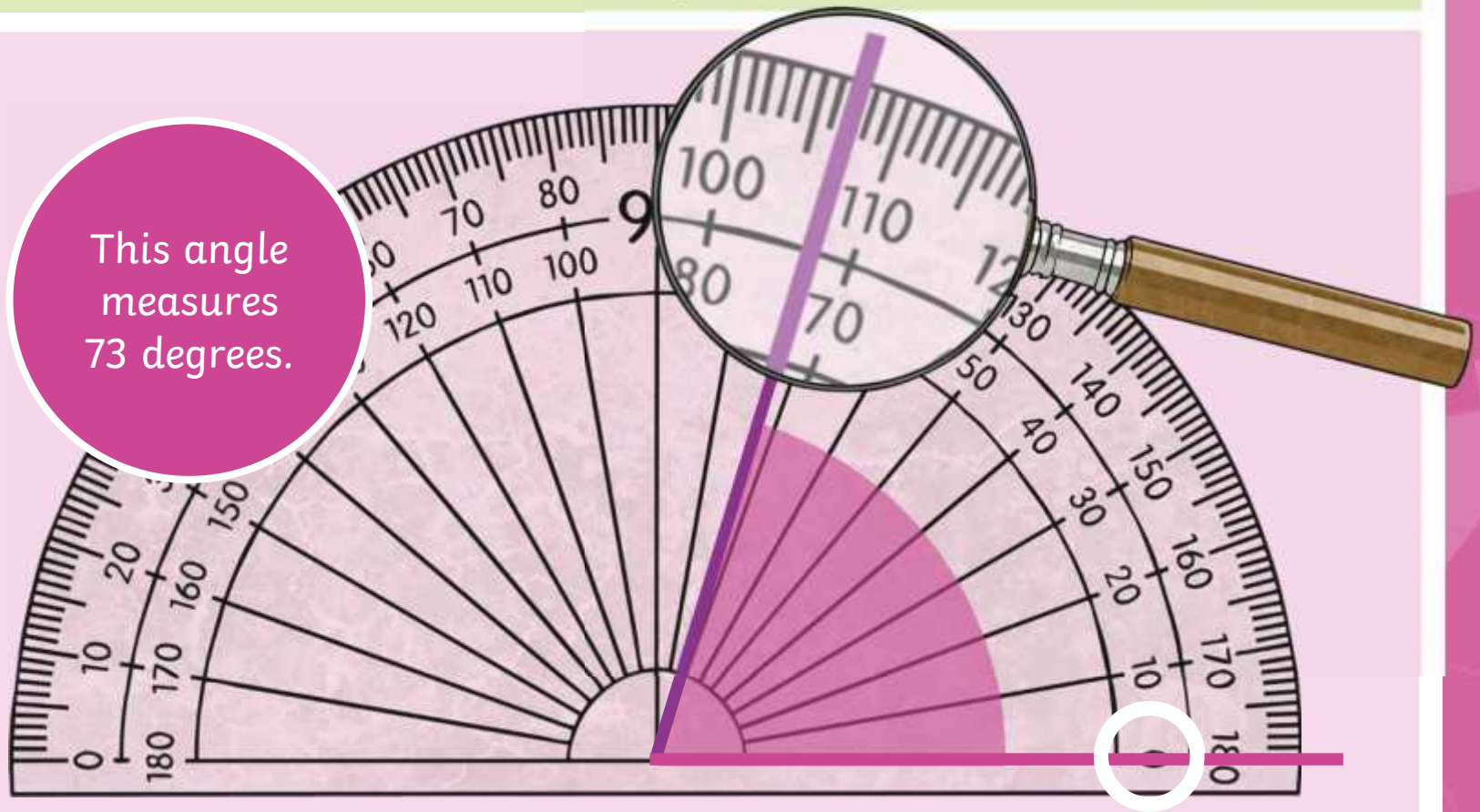


The Protractor

This angle is between the marked intervals on the anticlockwise scale.
How many degrees does the angle measure? Explain your reasoning.

Each increment on the outside scale measures 1 degree. We can use these increments to help us even when we are counting anticlockwise on the inside scale.

This angle
measures
73 degrees.



Reasoning

Ola and Kamil are using a protractor to measure this acute angle. Who has measured the angle correctly? Explain your reasoning.

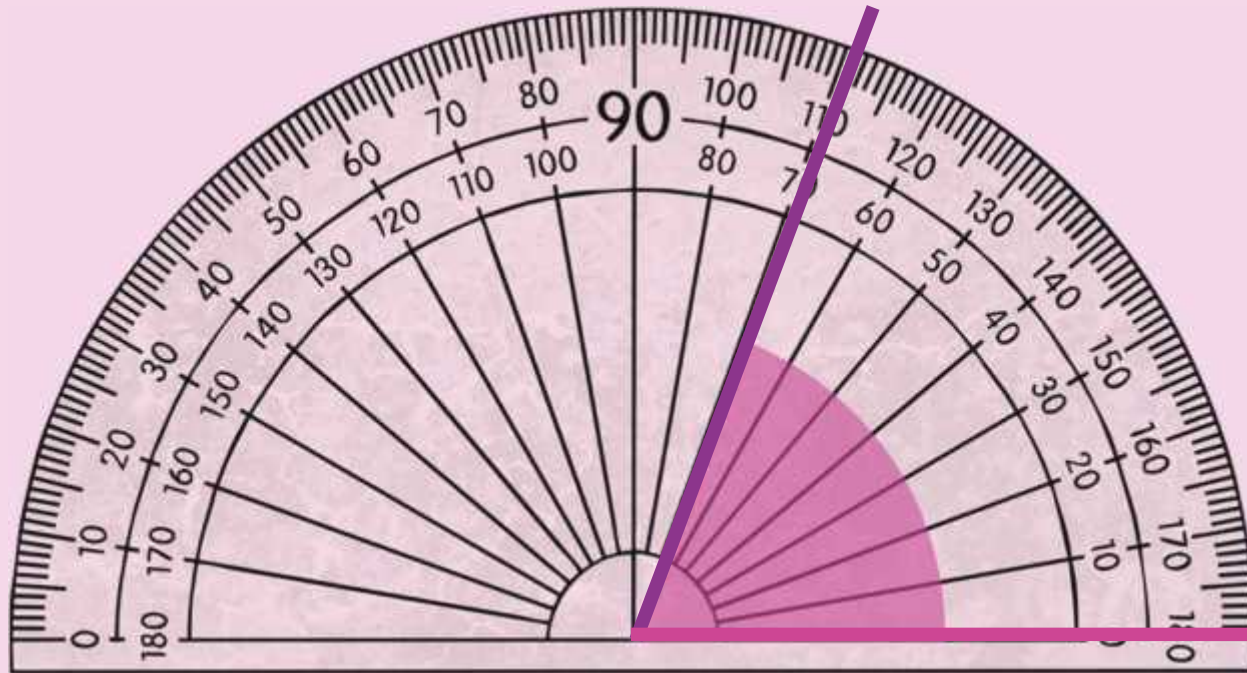
Explain the mistake the other child has made.



I think the angle measures 69°



I think the angle measures 111°



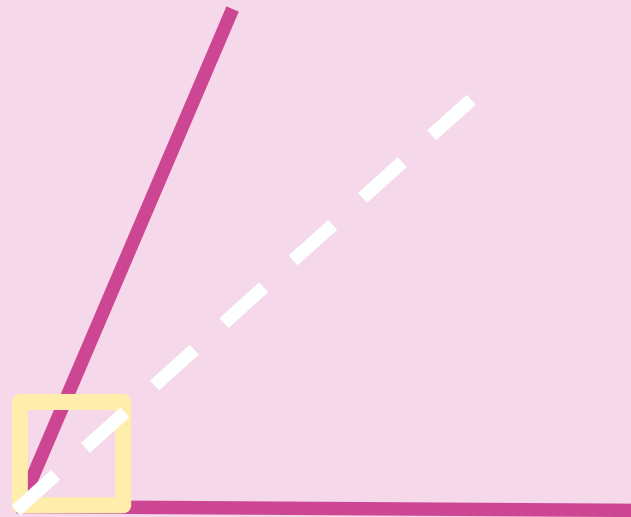
Reasoning

Before I measure this acute angle with my protractor, I estimate this angle will be greater than 45° .

Explain how Ola has used her understanding of angles to make a sensible estimate.



Ola

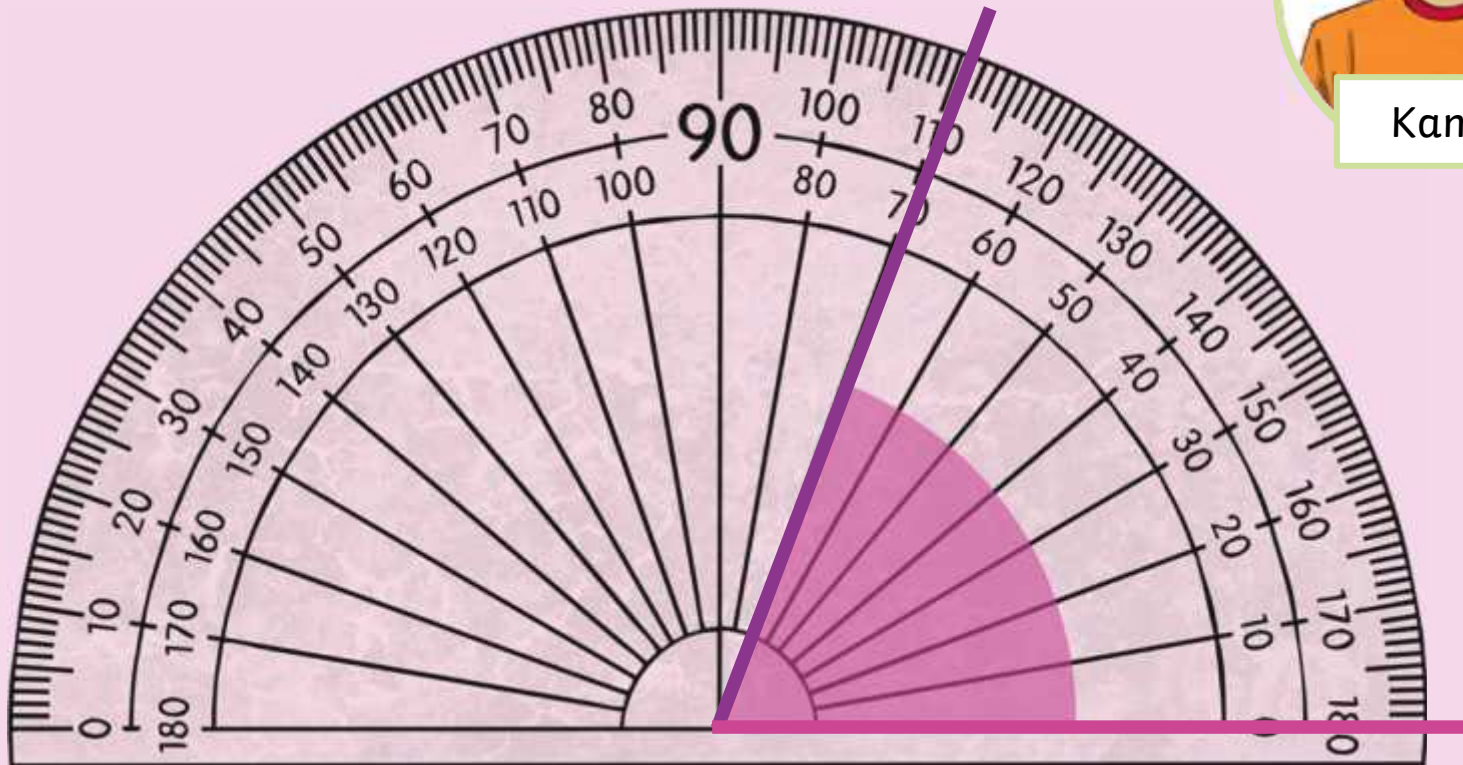


Ola knows that an acute angle is less than 90° .

Ola can see that the angle is greater than half of a right-angle. This means it must be more than 45° .

Reasoning

Kamil did not use his knowledge of acute angles.
He knows that acute angles are less than 90° ,
so the answer can not be 111° .
For this angle, he should have measured anticlockwise,
using the inside scale.

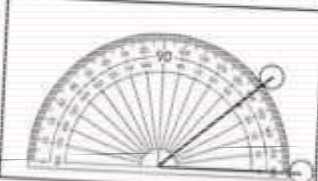
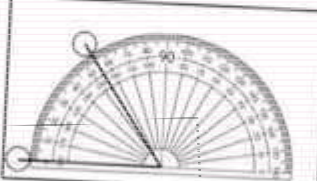
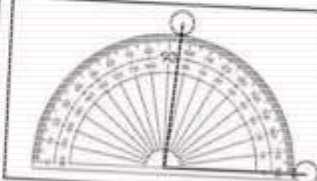


Measuring Acute Angles

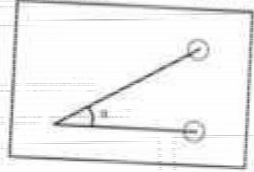
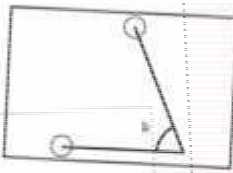
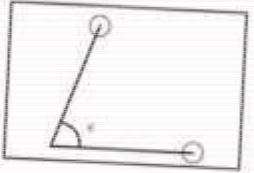
Measuring Acute Angles

To measure acute angles in degrees.

1) What is the size of the acute angle marked in each diagram?

2) Use a protractor to measure these acute angles.

Measuring Acute Angles

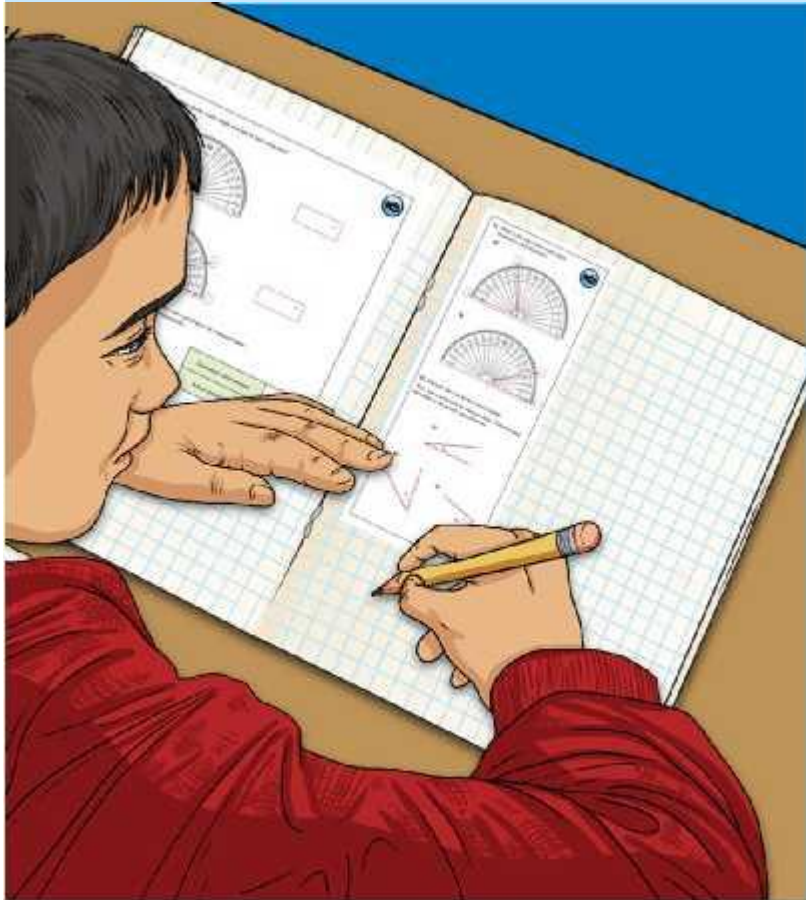
To measure acute angles in degrees.

Use a pencil and ruler to draw acute angles of any size.
 First, estimate the size of each angle you have drawn and explain your reasoning.
 Now, use a protractor to measure your angle. How close was your estimation?

I estimate this angle is _____° Reasoning: _____ The angle measures _____° How close was your estimation? _____	I estimate this angle is _____° Reasoning: _____ The angle measures _____° How close was your estimation? _____	I estimate this angle is _____° Reasoning: _____ The angle measures _____° How close was your estimation? _____
--------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------


Diving into Mastery

Dive in by completing your own activity!




24) Write the size of the acute angle formed in each diagram.

a)




b)




25) Estimate the size of 2 acute angles. Then, use a protractor to measure them. Compare your estimate to the actual measurement.

a)




Estimated measurement	
Actual measurement	

b)



Estimated measurement	
Actual measurement	

c)



Estimated measurement	
Actual measurement	

Aim

- To measure acute angles in degrees.

Success Criteria

- I can read acute angles shown on a protractor.
- I can use a protractor to accurately measure angles less than 90 degrees.
- I can read both the inside and outside scale of the protractor accurately.



Aim: To measure acute angles in degrees.				Date:					
				Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	T	PPA	S	I	AL	GP
I can read acute angles shown on a protractor.				Notes/Evidence					
I can use a protractor to accurately measure angles less than 90 degrees.									
I can read both the inside and outside scale of the protractor accurately.									
Next Steps									
) _____									
) _____									

T	Teacher	I	Independent
PPA	Planning, Preparation and Assessment	AL	Adult Led
S	Supply	GP	Guided Practice

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Next Steps									
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) _____									

T	Teacher	I	Independent
PPA	Planning, Preparation and Assessment	AL	Adult Led
S	Supply	GP	Guided Practice

- 1) a) 65°
b) 34°



- 2)
a) 20°
b) 45°
c) 70°

- 1) **Osman is correct as the angle is measured anticlockwise on the protractor. Selma measured clockwise by mistake.**
- 2) **Pasha is correct as the two angles measure 30° and 40° which totals 70° , which is also an acute angle.**



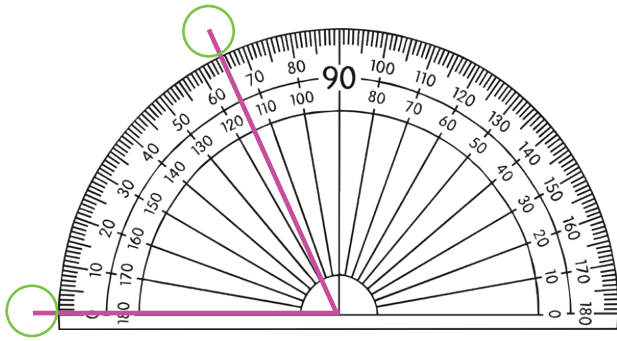
- 1) **Various Answers**





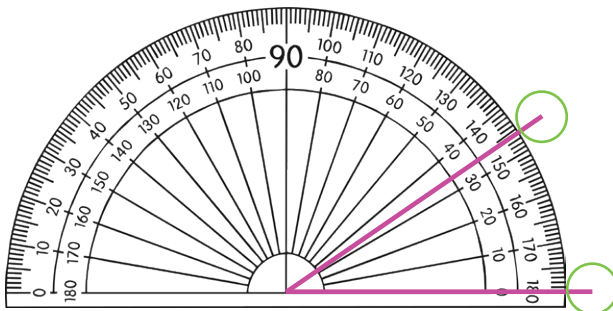
1) What is the size of the acute angle marked in each diagram?

a)



°

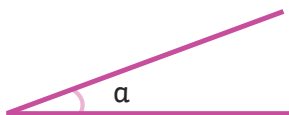
b)



°

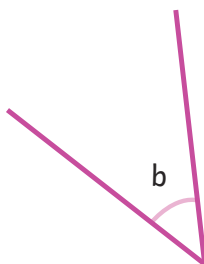
2) Estimate the size of these acute angles. Then, use a protractor to measure them. Compare your estimates to the actual measurements.

a)



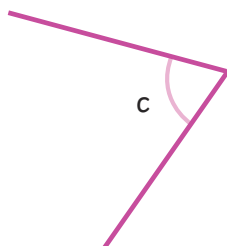
Estimated measurement	°
Actual measurement	°

b)



Estimated measurement	°
Actual measurement	°

c)



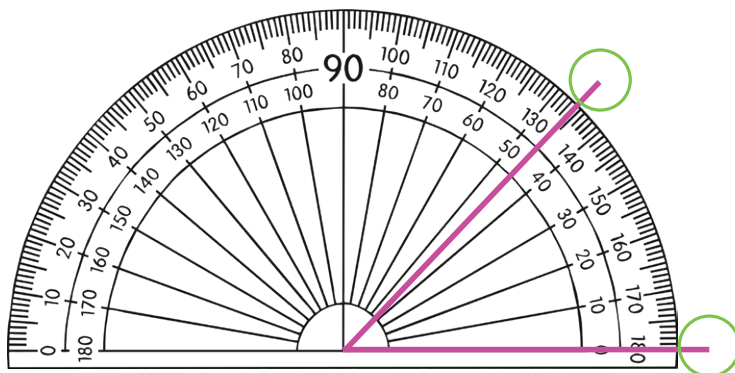
Estimated measurement	°
Actual measurement	°



1) Selma and Osman are using a protractor to measure this acute angle.

Who has measured the angle correctly? Explain your reasoning.

Also, explain the mistake the other child has made.



I think the angle measures 134°



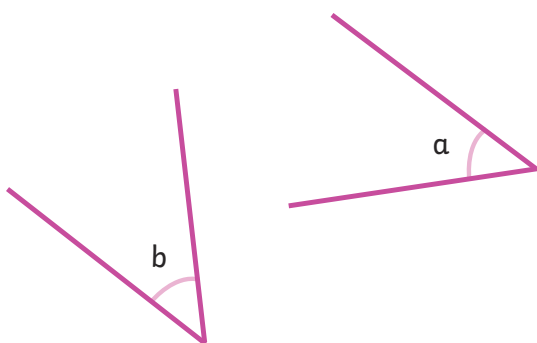
I think the angle measures 46°

2)



The total of these two acute angles will also be an acute angle.

Do you agree or disagree with Pasha? Prove it.



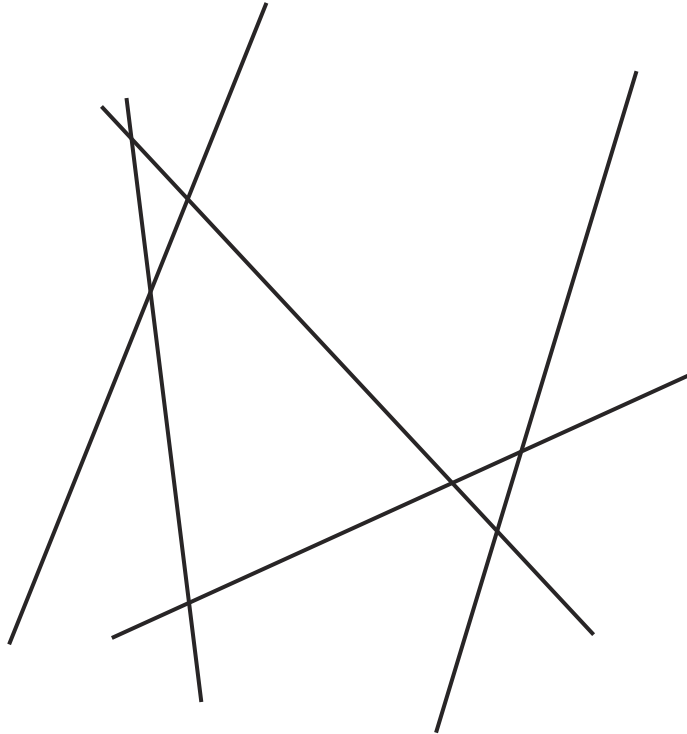


1)

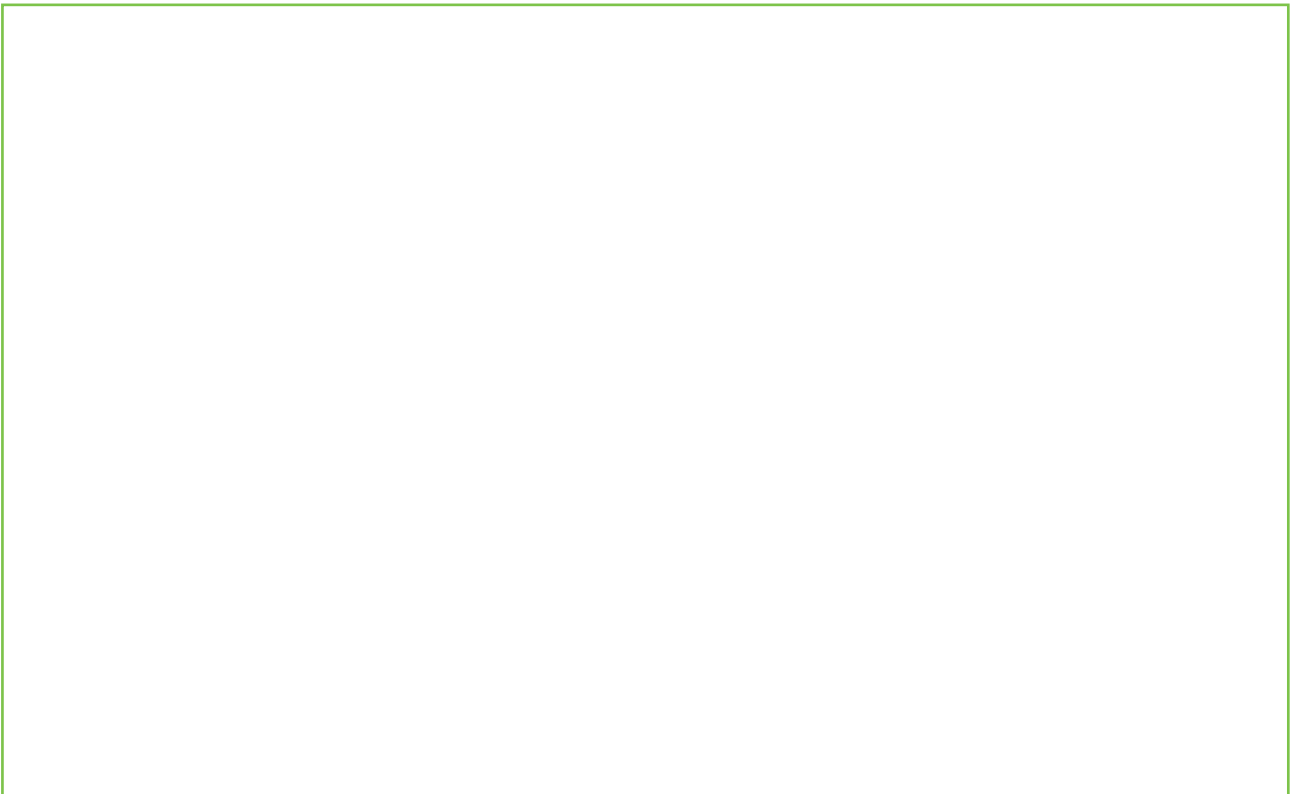
a) Layla has drawn a series of intersecting lines.

Colour in any acute angles you can see.

Use a protractor to check that the angles you have estimated as acute are less than 90° .



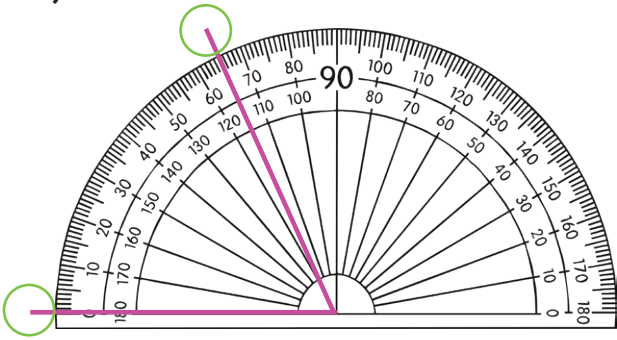
b) Draw your own picture using only straight lines. Measure and label all the acute angles in your drawing.



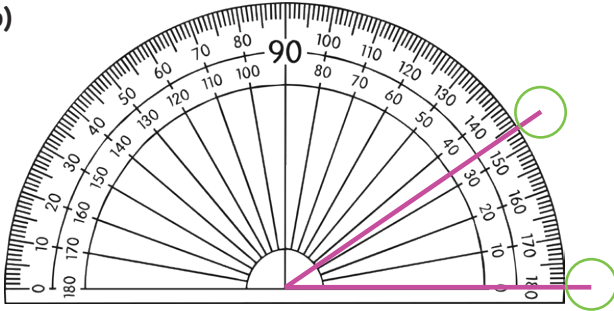
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a)



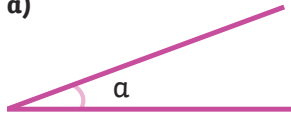
b)



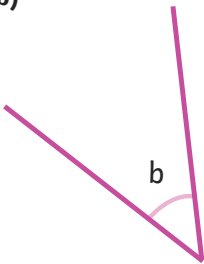
2) Estimate the size of these acute angles.

Then, use a protractor to measure them. Compare your estimates to the actual measurements.

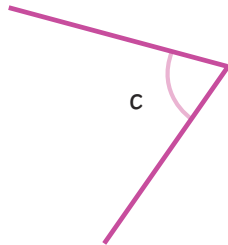
a)



b)



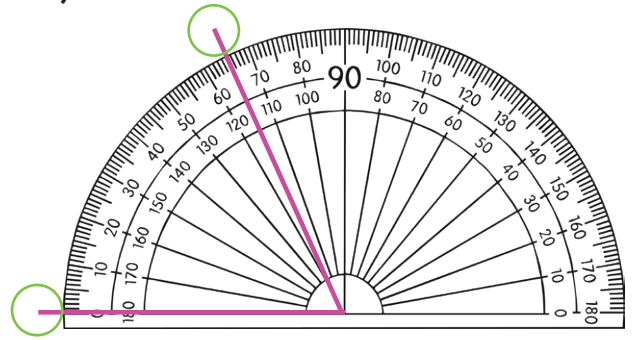
c)



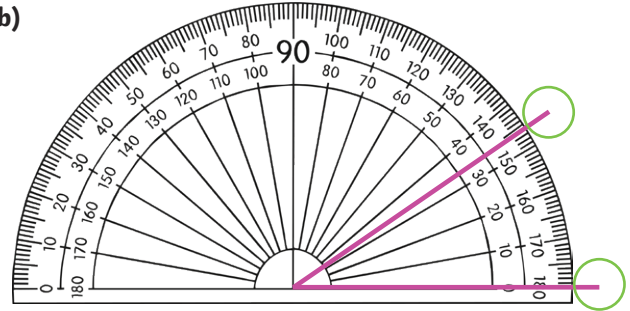
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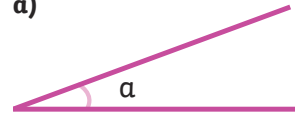
b)



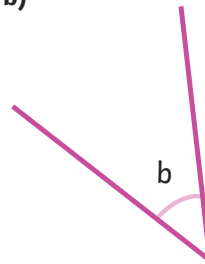
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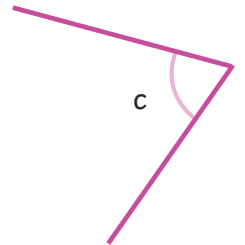
a)



b)



c)

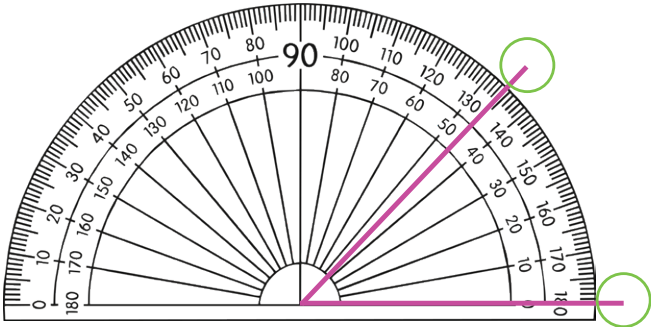


1) Selma and Osman are using a protractor to measure this acute angle.



Who has measured the angle correctly?
Explain your reasoning.

Also, explain the mistake the other child has made.



I think the angle measures 134°



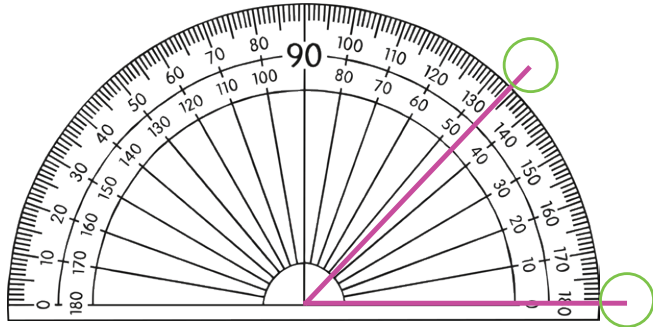
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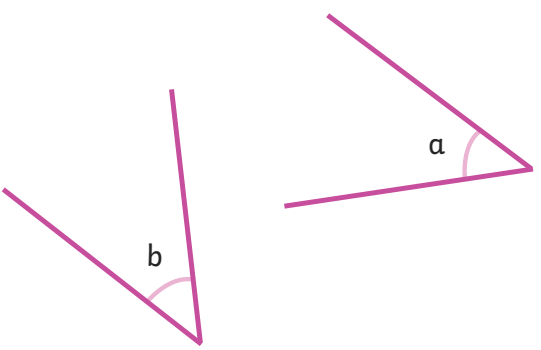
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2)



The total of these two acute angles will also be an acute angle.

Do you agree or disagree with Pasha? Prove it.

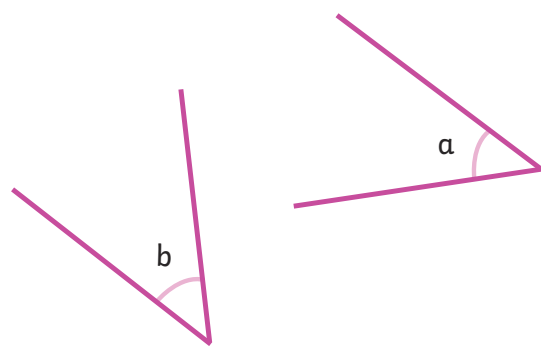


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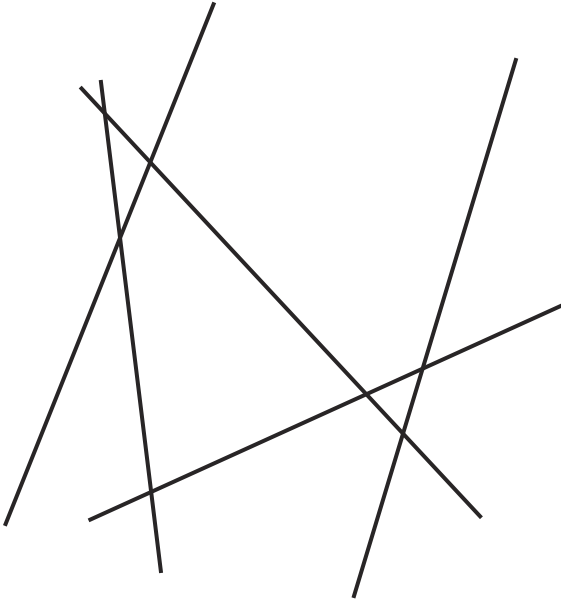
1)

- a) Layla has drawn a series of intersecting lines.



Colour in any acute angles you can see.

Use a protractor to check that the angles you have estimated as acute are less than 90° .



- b) Draw your own picture using only straight lines. Measure and label all the acute angles in your drawing.

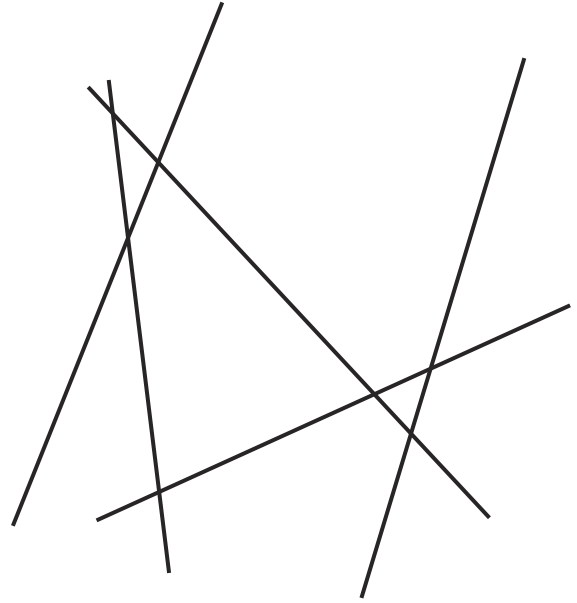
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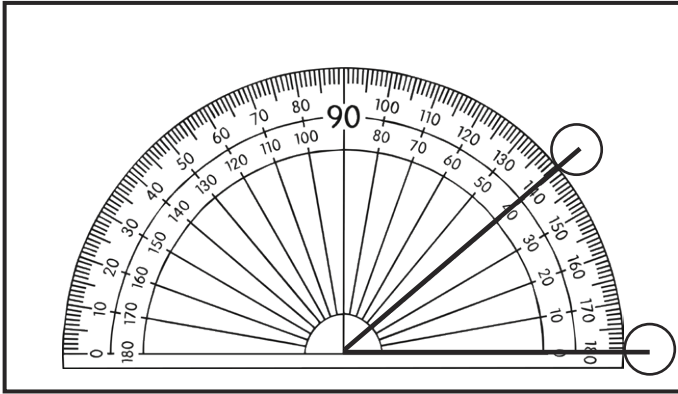


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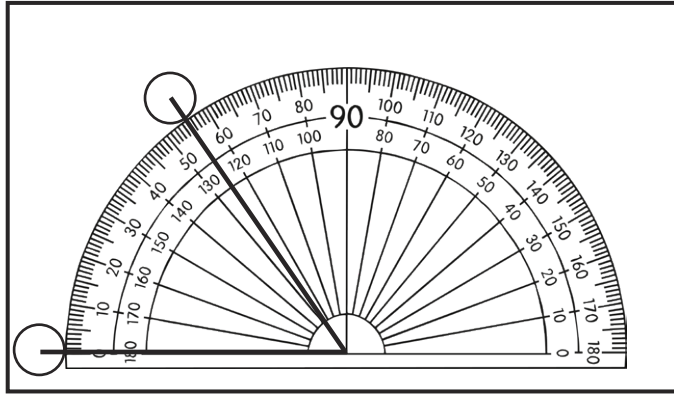
Measuring Acute Angles

To measure acute angles in degrees.

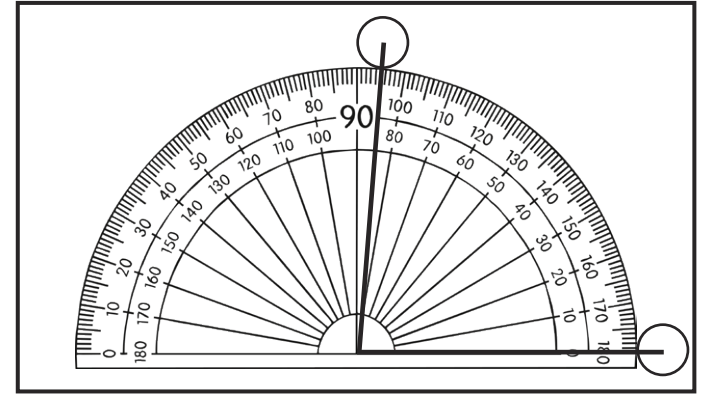
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= _____ °

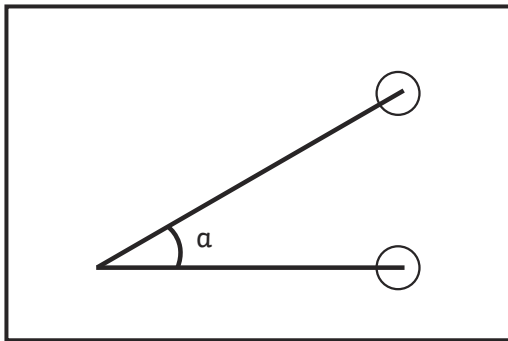


= _____ °

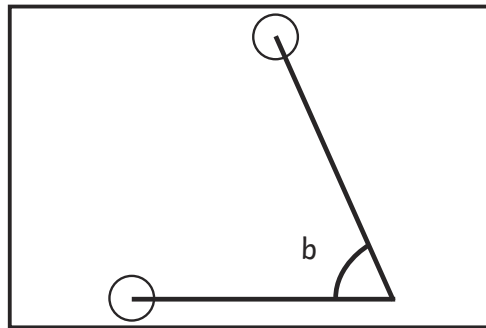


= _____ °

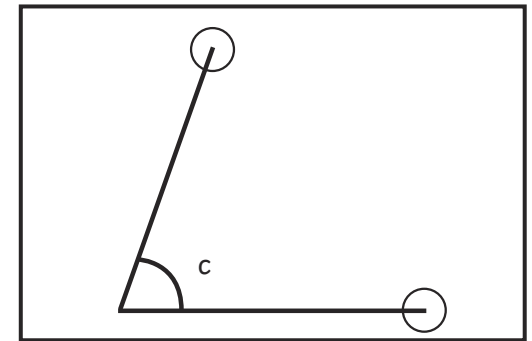
2) Use a protractor to measure these acute angles.



= _____ °



= _____ °

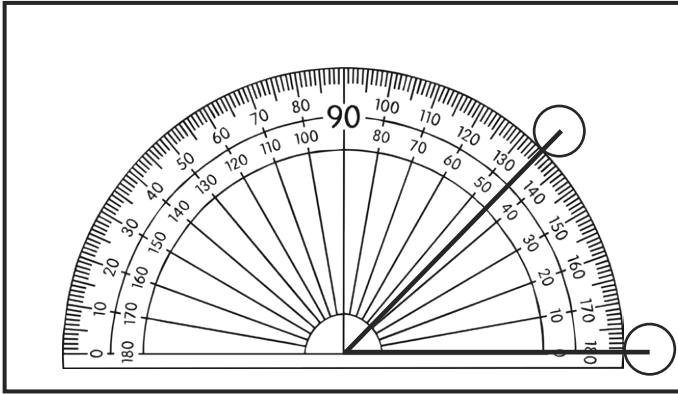


= _____ °

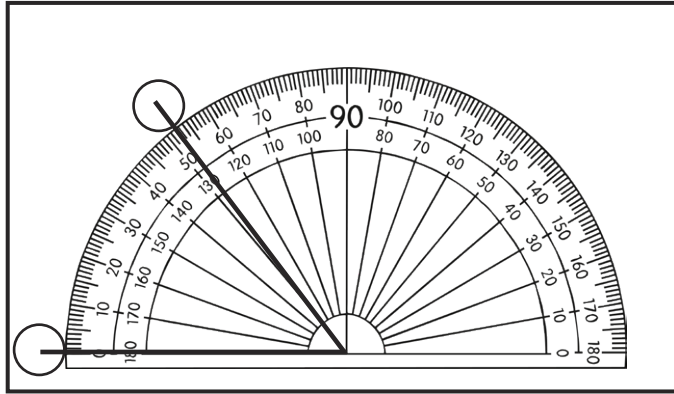
Measuring Acute Angles

To measure acute angles in degrees.

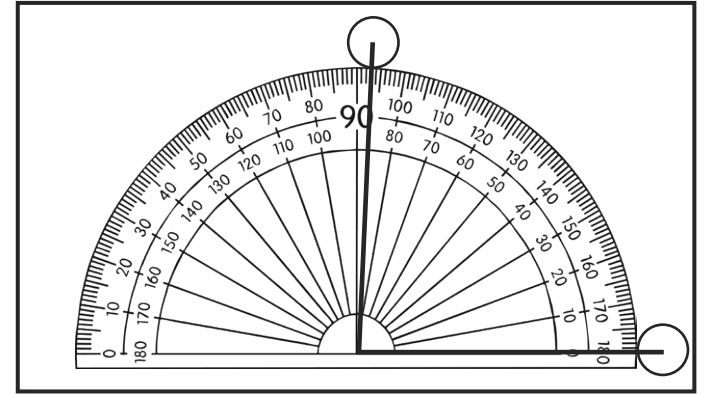
1) What is the size of the acute angle marked in each diagram?



= _____ °

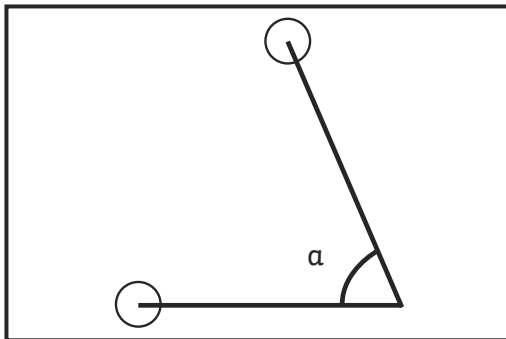


= _____ °

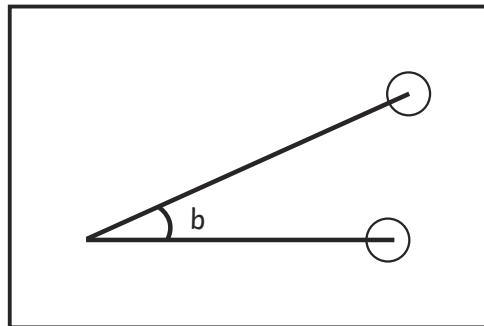


= _____ °

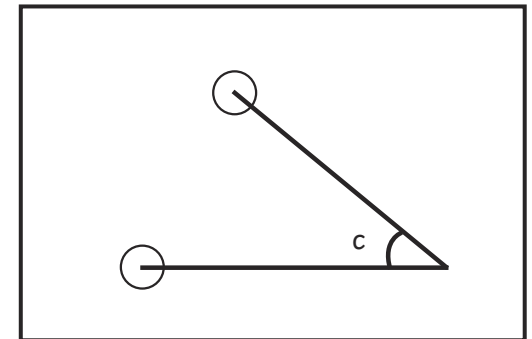
2) Use a protractor to measure these acute angles.



= _____ °



= _____ °



= _____ °

Measuring Acute Angles

To measure acute angles in degrees.



Use a pencil and ruler to draw acute angles of any size.

First, estimate the size of each angle you have drawn and explain your reasoning.

Now, use a protractor to measure your angle. How close were you to your estimation?

I estimate this angle is _____ ° Reasoning: _____ _____
The angle measures _____ ° How close was your estimation? _____

I estimate this angle is _____ ° Reasoning: _____ _____
The angle measures _____ ° How close was your estimation? _____

I estimate this angle is _____ ° Reasoning: _____ _____
The angle measures _____ ° How close was your estimation? _____

Measuring Acute Angles **Answers**

1) **40°**
Also accept 39° or 41°

55°
Also accept 54° or 56°

85°
Also accept 84° or 86°

2) **30°**
Also accept 29° or 31°

65°
Also accept 64° or 66°

70°
Also accept 69° or 71°

Measuring Acute Angles **Answers**

1) 45°
Also accept 44° or 46°

52°
Also accept 51° or 53°

87°
Also accept 86° or 88°

2) 66°
Also accept 65° or 64°

24°
Also accept 23° or 25°

39°
Also accept 38° or 40°

Properties of Shapes | Measuring Acute Angles

To measure acute angles in degrees.		
I can read acute angles shown on a protractor.		
I can use a protractor to accurately measure angles less than 90 degrees.		
I can read both the inside and outside scale of the protractor accurately.		

Properties of Shapes | Measuring Acute Angles

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