

Reasoning and Problem Solving

Step 2: Measuring with a Protractor 1

National Curriculum Objectives:

Mathematics Year 5: (5G4a) [Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles](#)

Mathematics Year 5: (5G4c) [Draw given angles and measure them in degrees](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Consider 2 statements, accompanying angles and protractors being used for measurement. Decide which child is using the protractor correctly, one obvious error. Angles to measure are in 10° increments on a horizontal line.

Expected Consider 2 statements, accompanying angles and protractors being used for measurement. Decide which child is using the protractor correctly, one error. Angles to measure are in 5° increments and most angles are presented on a horizontal line.

Greater Depth Consider 2 statements, accompanying angles and protractors being used for measurement. Decide which child is using the protractor correctly, there may be up to two errors. Angles to measure can be of any value and not all angles are presented on a horizontal line.

Questions 2, 5 and 8 (Problem Solving)

Developing Measure and calculate the sum of two angles, decide if their sum would still be acute. Angles to measure are in 10° increments on a horizontal line.

Expected Measure and calculate the sum of two angles, decide if their sum would still be acute. Angles to measure are in 5° increments and most angles are presented on a horizontal line.

Greater Depth Measure and calculate the sum of two angles, decide if their sum would still be acute. Angles to measure can be of any value and not all angles are presented on a horizontal line.

Questions 3, 6 and 9 (Problem Solving)

Developing Find acute angles created by 2 crossing lines. Measure and record angle size to confirm.

Expected Find acute angles created by 3 crossing lines. Measure and record angle size to confirm.

Greater Depth Find acute angles created by 4 crossing lines. Measure and record angle size to confirm, describing an acute angle. Children to discuss patterns they find and test their theory drawing diagrams.

More [Year 4 and Year 5 Properties of Shapes](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Measuring with a Protractor 1

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1a. Who has measured the angle correctly?

Lia

The angle is 60° .

Thalia

The angle is 120° .

Explain any errors.



5 R

1b. Who has measured the angle correctly?

Judy

The angle is 30° .

Mathias

The angle is 40° .

Explain any errors.



5 R

2a. The question said 'Draw 2 angles which, when put together, will still be acute'. Who has succeeded?

Lee

Chrissie



5 PS

2b. The question said 'Draw 2 angles which, when put together, will still be acute'. Who has succeeded?

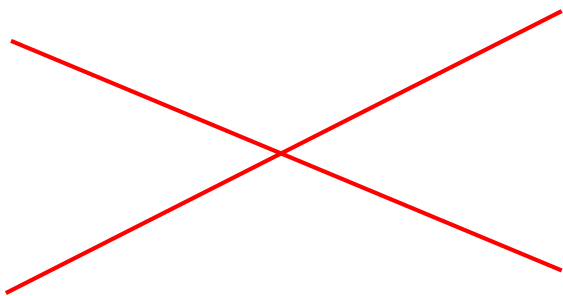
Jessica

Kyle



5 PS

3a. How many acute angles can you see? Mark them with an arc.

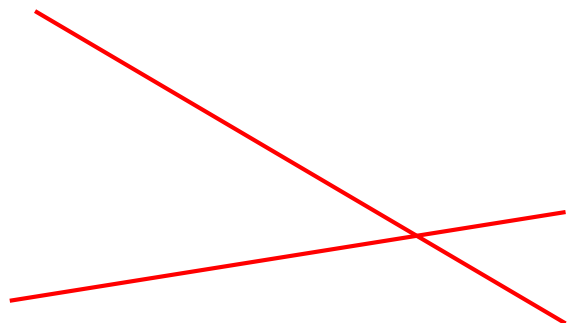


Measure to confirm the angles are $<90^\circ$.



5 PS

3b. How many acute angles can you see? Mark them with an arc.



Measure to confirm the angles are $<90^\circ$.



5 PS

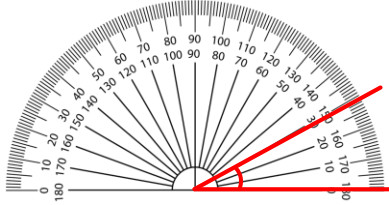
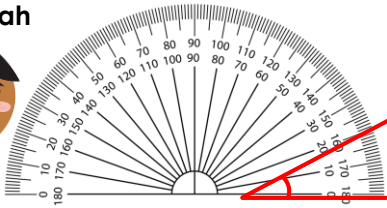
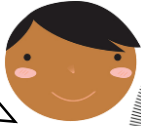
Measuring with a Protractor 1

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4a. Who has measured the angle correctly?

Hadassah

The angle is 20°.



Naomi

The angle is 30°.



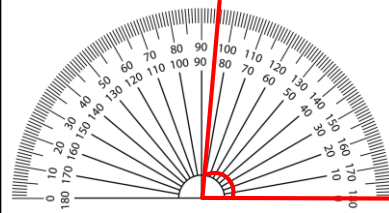
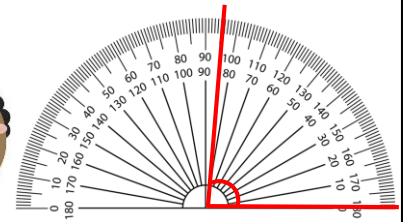
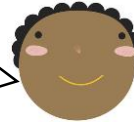
Explain any errors.

5 R

4b. Who has measured the angle correctly?

Kristian

The angle is 95°.



Katy

The angle is 85°.

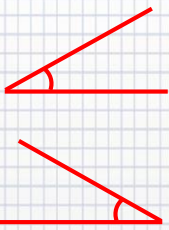


Explain any errors.

5 R

5a. The question said 'Draw 2 angles which, when put together, will still be acute'. Who has succeeded?

Richard



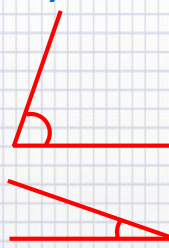
Bobbie



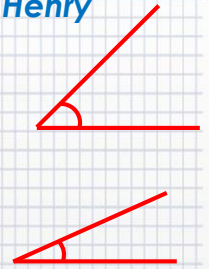
5 PS

5b. The question said 'Draw 2 angles which, when put together, will still be acute'. Who has succeeded?

Emily

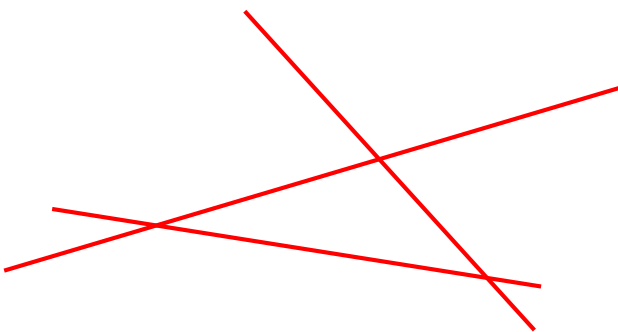


Henry



5 PS

6a. How many acute angles can you see? Mark them with an arc.

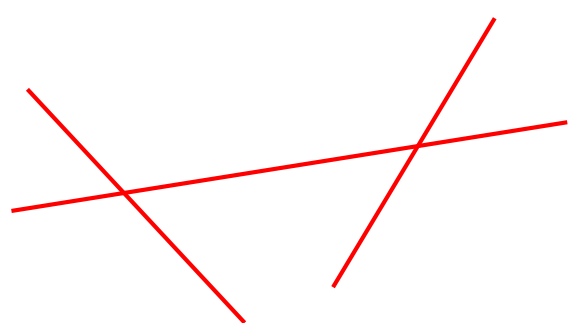


Measure to confirm the angles are $<90^\circ$.



5 PS

6b. How many acute angles can you see? Mark them with an arc.



Measure to confirm the angles are $<90^\circ$.

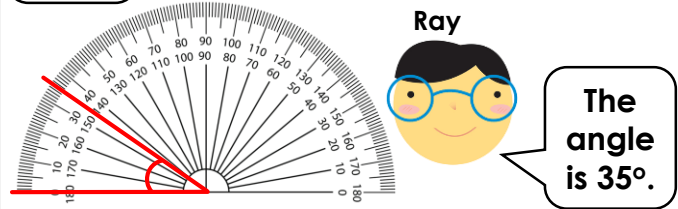
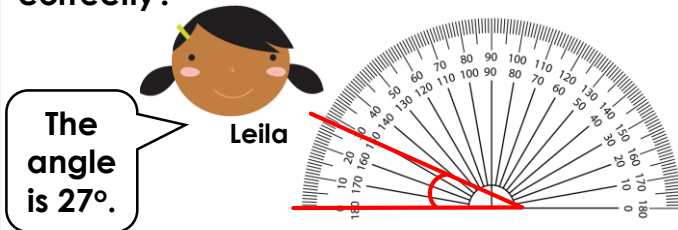


5 PS

Measuring with a Protractor 1

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7a. Who has measured the angle correctly?

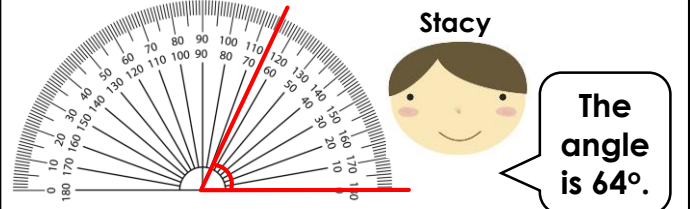
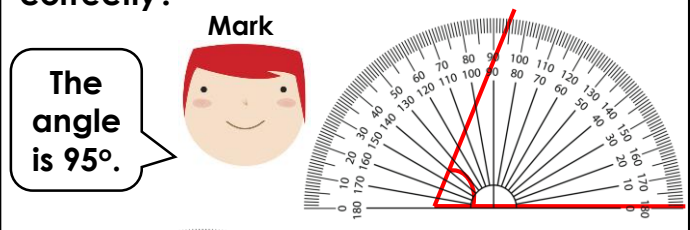


Explain any errors.



5 R

7b. Who has measured the angle correctly?

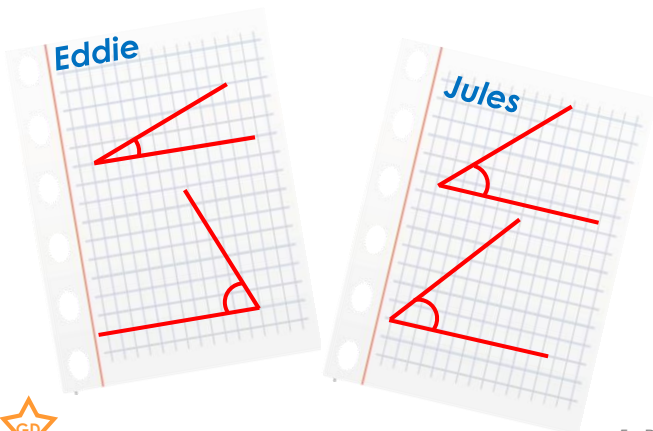


Explain any errors.



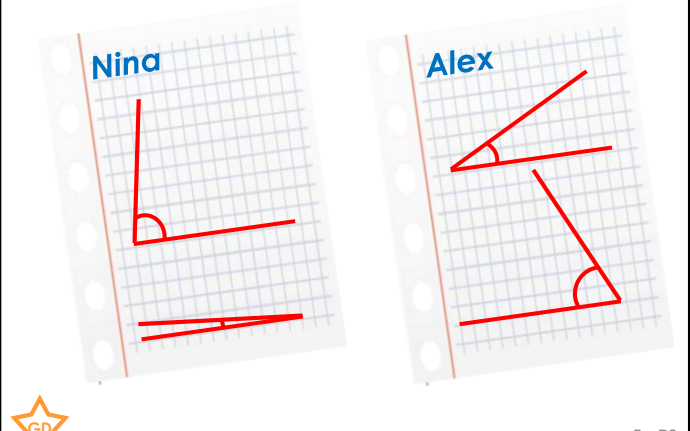
5 R

8a. The question said 'Draw 2 angles which, when put together, will still be acute'. Who has succeeded?



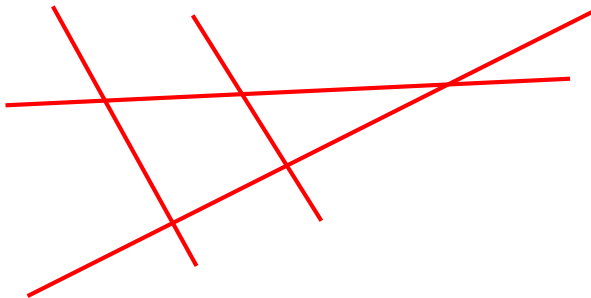
5 PS

8b. The question said 'Draw 2 angles which, when put together, will still be acute'. Who has succeeded?



5 PS

9a. How many acute angles can you see? Mark them with an arc.

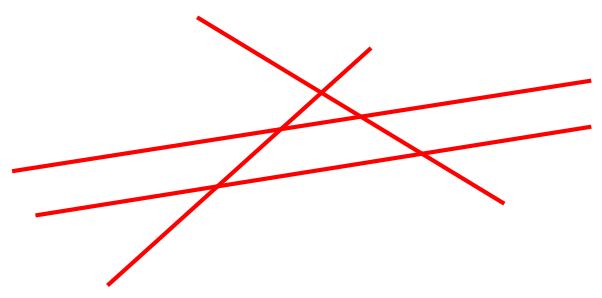


Measure to confirm the angles are acute.



5 PS

9b. How many acute angles can you see? Mark them with an arc.



Measure to confirm the angles are acute.



5 PS

Reasoning and Problem Solving Measuring with a Protractor 1

Due to line thickness children's measurements may vary from answers by around 1° .

Developing

1a. Lia is correct. Thalia has read the outer scale instead of the inner scale.

2a. Chrissie is correct – her angles are approximately 40° and 40° , so would create an angle of 80° together. Lee's are approximately 40° and 60° which would be $>90^\circ$.

3a.

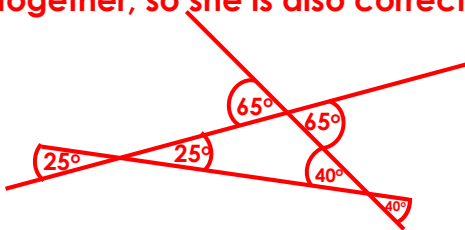


Expected

4a. Naomi is correct. Hadassah has forgotten to make sure the base line of the angle is lined up with the bottom line on the protractor.

5a. Richard's angles both measure approximately 30° so would be approximately 60° together and still acute. Bobbie's angles measure approximately 15° and 30° so would be approximately 45° together, so she is also correct.

6a.

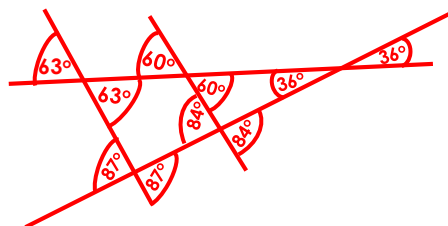


Greater Depth

7a. Ray is correct. Leila has not aligned the corner of the angle with the middle of the protractor.

8a. Eddie's angles measure approximately 68° and 21° so would be acute when combined. Jules' angles measure approximately 44° and 50° so would not be acute. When combined they would be $>90^\circ$.

9a.



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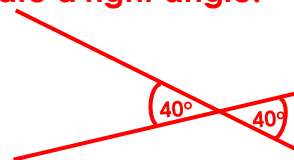
Due to line thickness children's measurements may vary from answers by around 1° .

Developing

1b. Mathias is correct. Judy has not put the corner of the angle into the centre of the protractor.

2b. Jessica is correct – her angles are approximately 30° and 40° , so would create an angle of approximately 70° . Kyle's are approximately 70° and 20° which create a right angle.

3b.

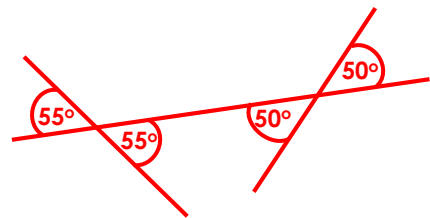


Expected

4b. Katy is correct. Kristian has read the outer scale, instead of the inner scale.

5b. Emily's angles measure approximately 70° and 20° so combined would be approximately 90° and not acute. Henry's angles measure approximately 25° and 45° so they would create an acute angle of approximately 70° .

6b.



Greater Depth

7b. Stacy is correct. Mark has misaligned the corner of the angle, it should be in the middle of the protractor, he has also read the inner scale instead of the outer scale.

8b. Nina's angles measure 80° and 5° so would be acute when combined measuring 85° . Alex's measure 65° and 28° so would be 93° combined, so not acute.

9b.

