

Reasoning and Problem Solving – Measure with a Protractor

National Curriculum Objectives:

Mathematics Year 6: (6G2a) [Compare and classify geometric shapes based on their properties and sizes](#)

Mathematics Year 6: (6G3a) [Draw 2-D shapes using given dimensions and angles](#)

Mathematics Year 6: (6G4a) [Find unknown angles in any triangles, quadrilaterals, and regular polygons](#)

Mathematics Year 6: (6G4b) [Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Find who should have which piece of chocolate tart from criteria given. Degrees in tens and two people per question.

Expected Find who should have which piece of custard/chocolate tart from criteria given. Degrees in fives and three people per question.

Greater Depth Find who should have which piece of chocolate tart from criteria given. Degrees in ones and four people per question.

Questions 2, 5 and 8 (Reasoning)

Developing Explain the mistake when measuring an angle. Degrees in tens and in regular orientations.

Expected Explain the mistake when measuring an angle. Degrees in fives and in regular orientations.

Greater Depth Explain the mistake when measuring an angle. Degrees in ones and in irregular orientations.

Questions 3, 6 and 9 (Problem Solving)

Developing Matching people to the angles they describe. Degrees in tens, simple clues and 2 people per question.

Expected Matching people to the angles they describe. Degrees in fives, more complex clues and 3 people per question.

Greater Depth Matching people to the angles they describe. Degrees in ones, complex clues and 4 people per question.

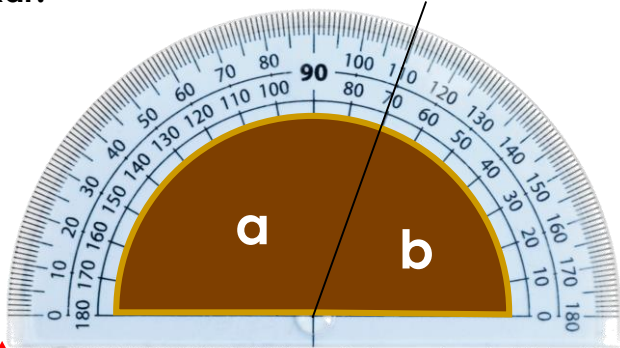
More [Year 6 Properties of Shapes](#) resources.

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

Measure with a Protractor

1a. Mum said Rita should get the most chocolate tart and Kal should get the least.

Which pieces of tart should go to Rita and Kal?

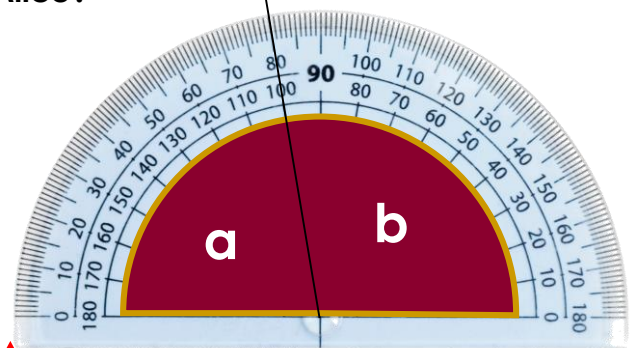


PS

Measure with a Protractor

1b. Dad said Jed should get the most chocolate tart and Alice should get the least.

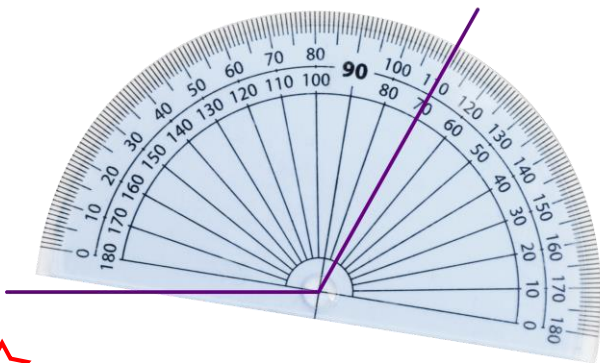
Which pieces of tart should go to Jed and Alice?



PS

2a. "My angle is 110° ," says Elliot.

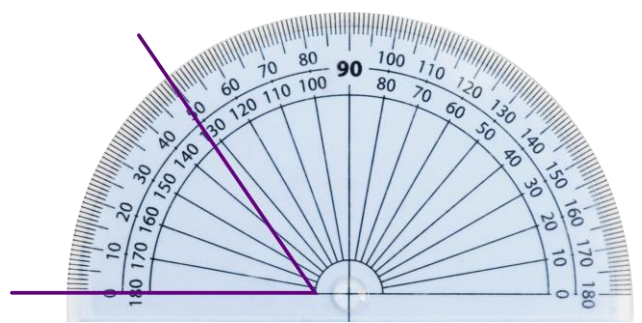
Has he measured his angle correctly? Explain your answer.



R

2b. "My angle is 50° ," says Amanda.

Has she measured her angle correctly? Explain your answer.



R

3a. Which angle belongs to which person?

My angle is acute.



Klara



Yani

My angle is obtuse.

60°

110°



PS

3b. Which angle belongs to which person?

My angle is obtuse.



Hugh



Nev

My angle is a right angle.

130°

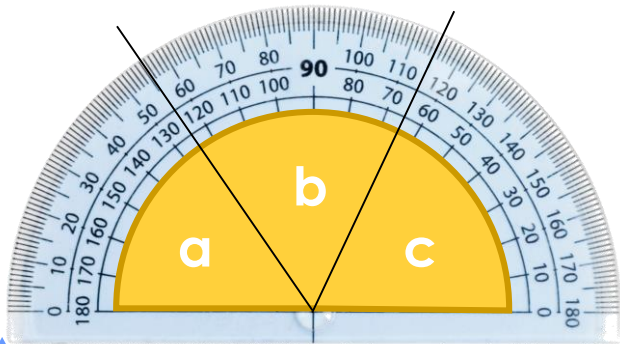
90°



PS

Measure with a Protractor

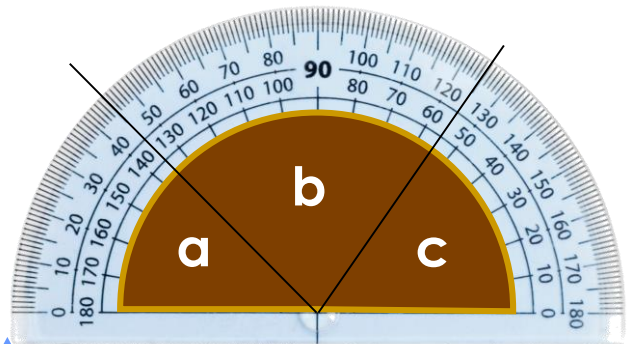
4a. Dad said Finny should get the most custard tart and Mali should get the least. Which pieces of tart should go to Finny, Mali and Caleb?



PS

Measure with a Protractor

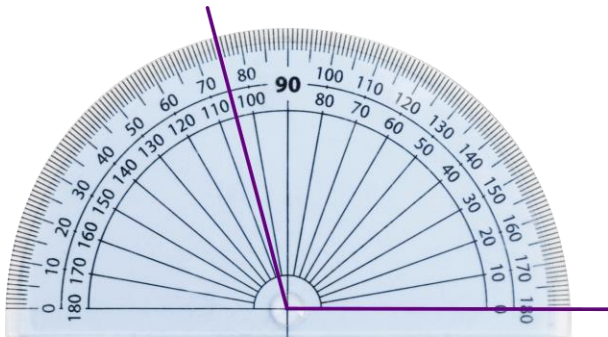
4b. Mum said Mark should get the most chocolate tart and Brit should get the least. Which pieces of tart should go to Mark, Brit and Dan?



PS

5a. "My angle is 85° ," says Vansh.

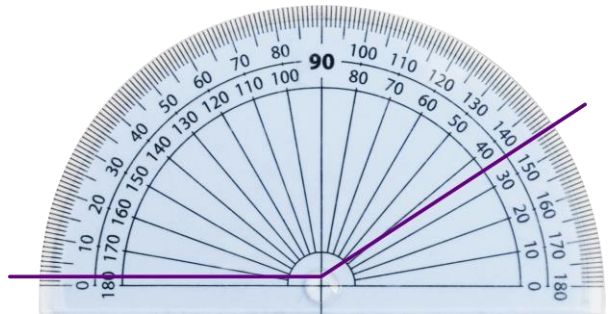
Has he measured his angle correctly? Explain your answer.



R

5b. "My angle is 145° ," says Sruthi.

Has she measured her angle correctly? Explain your answer.



R

6a. Which angle belongs to which person?

My angle is larger than Tim's.



Lisa



Tim

My angle is obtuse.

My angle is the only reflex angle.



Fin

200°

135°

145°



PS

6b. Which angle belongs to which person?

My angle is acute.



Ceri



Imran

My angle is reflex.

My angle is more than 90° .



Carly

180°

80°

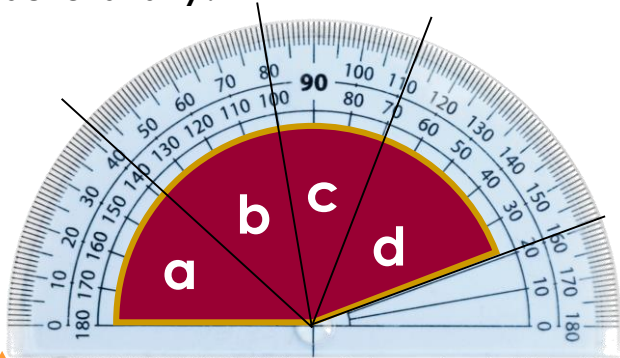
185°



PS

Measure with a Protractor

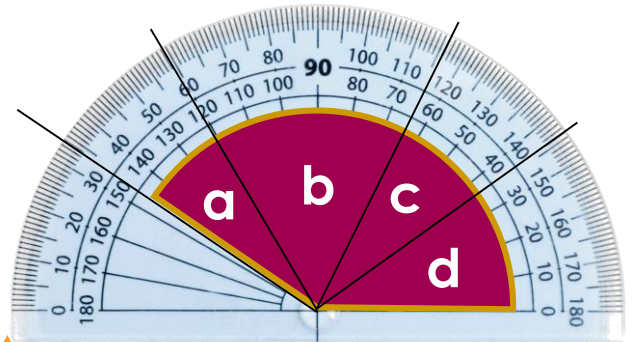
7a. Mum said Hal should get the most chocolate tart, Mel should get the least and Rachel should get 38° . Which pieces of tart should go to Hal, Mel, Rachel and Ty?



PS

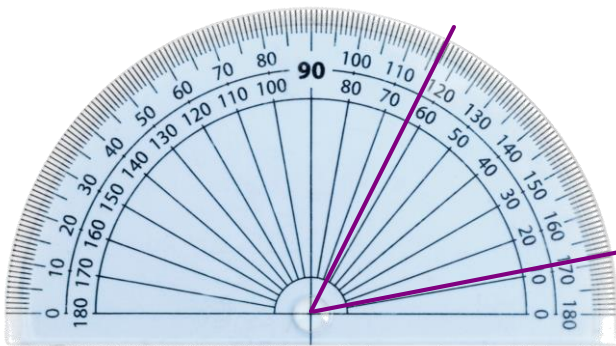
Measure with a Protractor

7b. Dad said Millie should get the most chocolate tart, Molly should get the least and Tegid should get 28° . Which pieces of tart should go to Millie, Molly, Tegid and Phil?



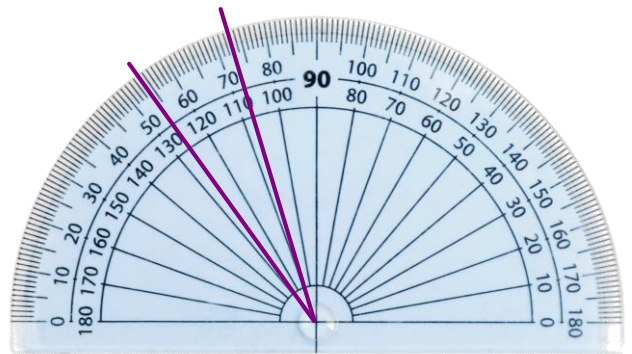
PS

8a. "My angle is 64° ," says Jason. Has he measured his angle correctly? Explain your answer.



R

8b. "My angle is 29° ," says Scarlett. Has she measured her angle correctly? Explain your answer.



R

9a. Which angle belongs to which person?

My angle is obtuse.		Nina
My angle is reflex.		Ella
My angle is the closest to a right angle.		Etta
My angle is acute.		Louis



PS

9b. Which angle belongs to which person?

My angle is the only acute angle.		Norah
My angle is obtuse.		Nat
My angle is the closest to being reflex.		Sam
My angle is less than 174° .		Ray



PS

290°	101°	81°	78°
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175°	114°	174°	37°
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Reasoning and Problem Solving Measure with a Protractor

Developing

- 1a. Rita – a, Kal – b
- 2a. No because he has not lined up the bottom line of the protractor with the bottom line of the angle.
- 3a. Klara – 60° , Yani – 110°

Expected

- 4a. Finny – c, Mali – a, Caleb – b
- 5a. No because he has read the outer scale instead of the inner scale.
- 6a. Lisa – 145° , Tim – 135° , Fin – 200°

Greater Depth

- 7a. Hal – d, Mel – c, Rachel – b, Ty – a,
- 8a. No because he has not lined up the bottom line of the protractor with the bottom line of the angle.
- 9a. Nina – 101° , Ella – 290° , Etta – 81° , Louis – 78°

Reasoning and Problem Solving Measure with a Protractor

Developing

- 1b. Jed – b, Alice – a
- 2b. No because she has not lined up the point of the angle with the cross of the protractor.
- 3b. Hugh – 130° , Nev – 90°

Expected

- 4b. Mark – b, Brit – a, Dan – c
- 5b. No because she has not lined up the bottom line of the protractor with the bottom line of the angle.
- 6b. Ceri – 80° , Imran – 185° , Carly – 180°

Greater Depth

- 7b. Millie – b, Molly – a, Tegid – c, Phil – d
- 8b. No because she has not lined up the protractor properly and has not calculated the difference between the points correctly.
- 9b. Norah – 37° , Nat – 174° , Sam – 175° , Ray – 114°