

Reasoning and Problem Solving

Step 3: Calculate Angles

National Curriculum Objectives:

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 Use the digit cards to work out the 3 missing 2-digit angles. 3 missing numbers. Angles given in multiples of 10.

Expected Use the digit cards to work the 3 missing 2-digit angles. 3 to 4 missing numbers. Angles given in multiples of 5.

Greater Depth Use the digit cards to work out the 3 missing 2-digit angles. 6 missing numbers. Angles given in one degree increments.

Questions 2, 5 and 8 (Problem Solving)

Developing Use the hints to work out the 2 or 3 angles which make up a right angle. Angles given in multiples of 10.

Expected Use the hints to work out the 3 or 4 angles which make up a 180° or 360° angle. Angles given in multiples of 5.

Greater Depth Use the hints to work out the 5 angles which make up a 360° angle. Using quarters, three-quarter and one-tenths of the full turn. Angles given in one degree increments.

Questions 3, 6 and 9 (Reasoning)

Developing Determine whether a statement relating to the distance a minute hand on a clock face moves to an angle is true or false. All movements equivalent to 90° or 180° .

Expected Determine whether a statement relating to the distance a minute hand on a clock face moves to an angle is true or false. All movements in intervals of 10° to 360° .

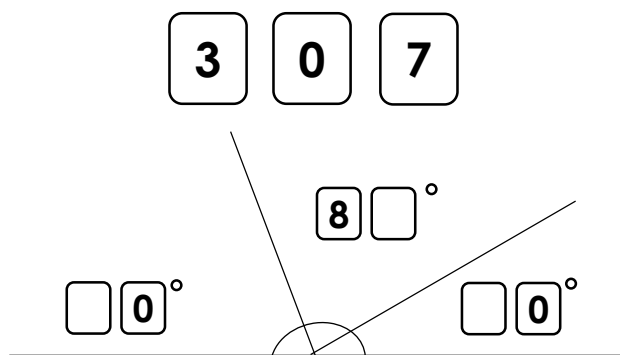
Greater Depth Determine whether a statement relating to the distance a minute hand on a clock face moves to an angle is true or false. All movements in interval of 10° past 360° .

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

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

Calculate Angles

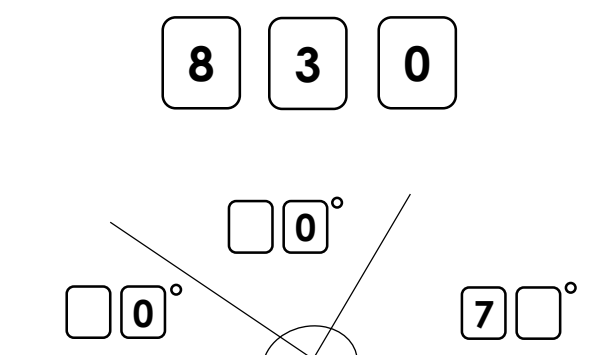
1a. Use the digit cards to fill in the missing angles.



PS

Calculate Angles

1b. Use the digit cards to fill in the missing angles.



PS

2a. Use the hints to work out the angles.

Two angles make up a right angle.

Angle B is double angle A.

Both the angles are multiples of 10.

What are the 2 angles?



PS

2b. Use the hints to work out the angles.

Three angles make up a right angle.

A and B are equal angles.

C is half of 100.

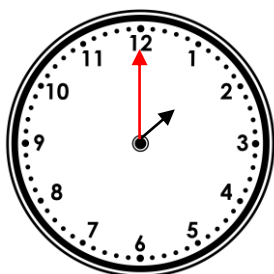
They are all multiples of 10.

What are the 3 angles?



PS

3a. The minute hand on the clock moves from the 12 to the 3. It makes a 70° angle. True or false?

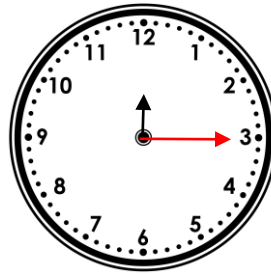


Explain why.



R

3b. The minute hand on the clock moves from the 3 to the 9. It makes a 200° angle. True or false?



Explain why.

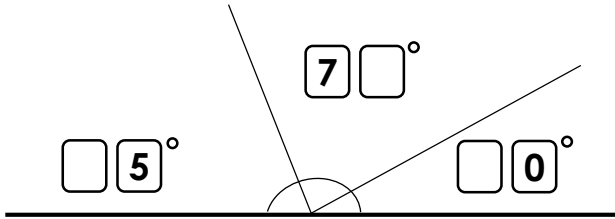


R

Calculate Angles

4a. Use the digit cards to fill in the missing angles. Each angle is a multiple of 5.

4 5 6

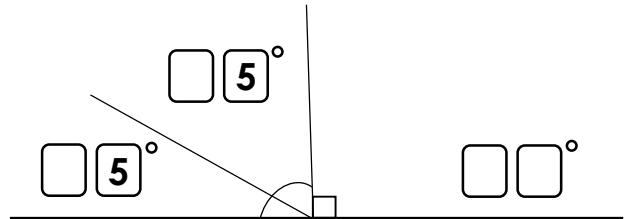


PS

Calculate Angles

4b. Use the digit cards to fill in the missing angles. Each angle is a multiple of 5.

3 9 5 0



PS

5a. Use the hints to work out the angles.

Three angles make up a straight line.

Angle A is half of angle B.

Angle C is five more than 130° .

All the angles are multiples of 5.

What are the 3 angles?



PS

5b. Use the hints to work out the angles.

Four angles make up a full turn.

A and B are equal angles and when added together equal 130° .

C is a right angle.

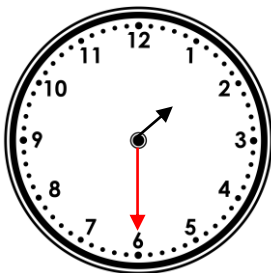
D is an obtuse angle.

What are the 4 angles?



PS

6a. The minute hand on the clock moves from the 6 to the 8. It makes a 45° angle. True or false?

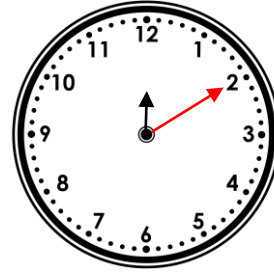


Explain why.



R

6b. The minute hand on the clock moves from the 2 to the 7. It makes a 170° angle. True or false?



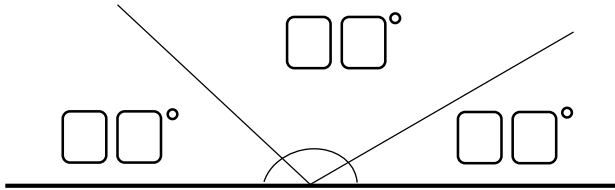
Explain why.



R

Calculate Angles

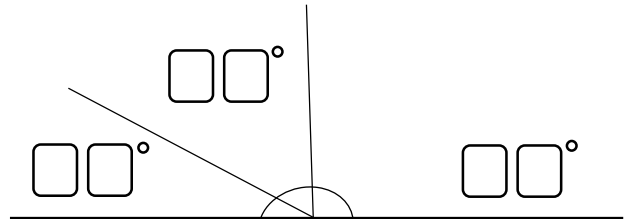
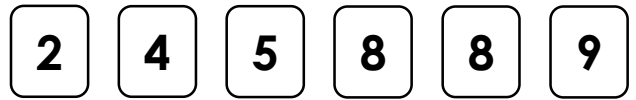
7a. Use the digit cards to fill in the missing angles.



PS

Calculate Angles

7b. Use the digit cards to fill in the missing angles.



PS

8a. Use the hints to work out the angles.

Five angles make up a full turn.

Angle A is a right angle.

Angle B is half of angle C and together they equal 165° .

Angle D is a multiple of 10.

Angle E is 1-digit.

What are the 5 angles?



PS

8b. Use the hints to work out the angles.

Five angles make up a full turn.

A is three-quarters of the full turn.

Angle B is one-tenth of the full turn.

Angle C is half of angle D and together they equal 30° .

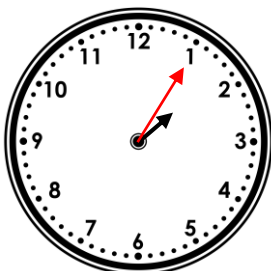
Angle E is a multiple of 12.

What are the 5 angles?



PS

9a. The minute hand on the clock moves from the 1 all the way round and passes the 1 again, and stops at 4. It makes a 460° angle. True or false?

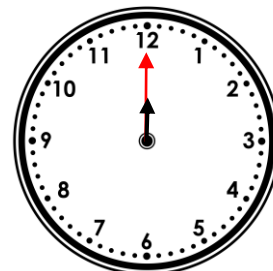


Explain why.



R

9b. The minute hand on the clock moves from the 12 all the way round and passes the 12 again, and stops at 9. It makes a 540° angle. True or false?



Explain why.



R

Varied Fluency Calculate Angles

Developing

1a 70° , 80° and 30°

2a. $A = 30^\circ$, $B = 60^\circ$

3a. False – it has made a 90° angle (a right angle) as it has moved a quarter turn.

Expected

4a. 65° , 75° and 40°

5a. $A = 15^\circ$, $B = 30^\circ$ and $C = 135^\circ$

6a. False – it has made a 60° angle. From 6 to 9 it would make a 90° angle (right angle). 45 is half of 90 so it would have to be between 7 and 8.

Greater Depth

7a. Multiple answers, the digits 3, 5 and 8 can be in any order in the tens column, and the digits 4, 7 and 9 can be in any order in the ones column, e.g. 37° , 54° and 89° or 39° , 54° and 87° .

8a. $A = 90^\circ$, $B = 55^\circ$, $C = 110^\circ$, $D = 100^\circ$ and $E = 5^\circ$

9a. False – it has turned a full turn and a quarter turn. $360^\circ + 90^\circ = 450^\circ$.

Varied Fluency Calculate Angles

Developing

1b. 30° , 80° and 70°

2b. $A = 20^\circ$, $B = 20^\circ$ and $C = 50^\circ$

3b. False – it has made a 180° angle (a straight line) as it has moved a half a turn.

Expected

4b. 35° , 55° and 90°

5b. $A = 65^\circ$, $B = 65^\circ$, $C = 90^\circ$ and $D = 140^\circ$

6b. False – it has made a 150° angle. Each 5 minute interval is equal to a 30° angle.

Greater Depth

7b. Multiple answers, the digits 2, 5 and 9 can be in any order in the tens column, and the digits 4, 8 and 8 can be in any order in the ones column, e.g. 24° , 58° and 98° or 28° , 58° and 94° .

8b. $A = 270^\circ$, $B = 36^\circ$, $C = 10^\circ$, $D = 20^\circ$ and $E = 24^\circ$

9b. False – it has turned a full turn and a three-quarter turn. $360^\circ + 270^\circ = 630^\circ$.