# Year 5/6 Maths Booklet 2

| Date | |
|---|---|
| Subject/s | Maths |
| Learning Objective  | To recall and use multiplication and division facts |

1) 7 x 2 = _____
2) 3 x 8 = _____
3) 4 x 6 = _____
4) 2 x 9 = _____
5) 6 x 4 = _____
6) 8 x 4 = _____
7) 7 x 5 = _____
8) 9 x 10 = _____
9) 6 x 6 = _____
21) 8 x 6 = _____
22) 7 x 9 = _____
23) 6 x 7 = _____
24) 8 x 8 = _____
25) 6 x 3 = _____
26) 9 x 6 = _____
27) 7 x 5 = _____
28) 8 x 9 = _____
29) 10 x 7 = _____

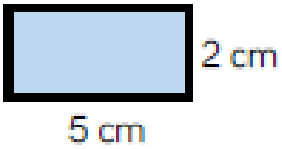
1) 6 x _____ = 18
2) 8 x _____ = 16
3) _____ x 7 = 7
4) _____ x 9 = 45
5) 7 x _____ = 21
6) _____ x 6 = 36
7) _____ x 8 = 40
8) 9 x _____ = 90
9) _____ x 8 = 32
10) _____ x 6 = 24
11) 7 x _____ = 63
12) _____ x 6 = 0
13) _____ x 8 = 80
14) 9 x _____ = 54
15) 6 x _____ = 42
16) _____ x 8 = 56
17) _____ x 9 = 81
18) 6 x _____ = 30
19) 8 x _____ = 48
20) _____ x 9 = 18
21) _____ x 7 = 49
22) 8 x _____ = 72
23) _____ x 6 = 48
24) 9 x _____ = 45
25) _____ x 7 = 63
26) 6 x _____ = 36
27) 8 x _____ = 64
28) _____ x 6 = 42
29) _____ x 9 = 72
30) 7 x _____ = 56
31) _____ x 8 = 48
32) 6 x _____ = 60
33) 9 x _____ = 45
34) _____ x 8 = 72
35) _____ x 7 = 28
36) 9 x _____ = 81
37) _____ x 6 = 6
38) _____ x 8 = 64
39) 7 x _____ = 49
40) _____ x 9 = 54

| | | | |
|---|---|---|---|
| Date | | | |
| Subject/s | **Maths** | | |
| Learning Objective  | To use scale factors | | |
| | | | |
| | | SA  | TA  |
| Success Criteria  | I know if you enlarge something you multiply all the measurements by the same amount | | |
| | I know if a scale factor is a fraction the shape becomes smaller e.g. a 16 cm line enlarged by a SF of $\frac{1}{4}$ is 4cm | | |
| | I know scale factors can be used to represent larger measurements e.g. 1cm represents 1m | | |
| Support | Independent Adult Support ( ) Group Work | | |

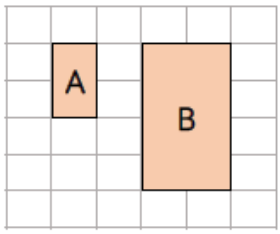
Pre-task:

Enlarge the following shapes by

- Scale factor 2
- Scale factor 3
- Scale factor 4




Complete the sentences to describe the shapes.




Shape B is _____ as big as shape A.

Shape A has been enlarged by scale factor _____ to make shape B.

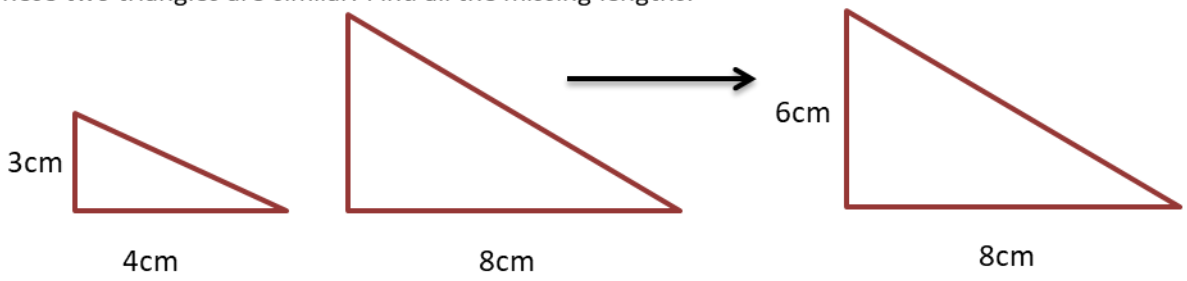
## Teacher Led

What is scale factor? https://www.youtube.com/watch?v=pue9Qc1Fg0k (until 2:12)

https://www.youtube.com/watch?v=iKASqoBG-_s

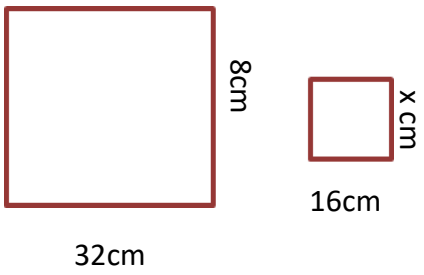
**Example**

These two triangles are similar. Find all the missing lengths.




| | |
|---|---|
| Step 1) | Find the scale factor by looking at how you can go from 4cm to 8cm. *In this case we multiplied by 2!* |
| Step 2) | Multiply all the sides on the original shape to give you the sides on the other shape. |

If the shape if getting smaller, the scale factors are written as a fraction.



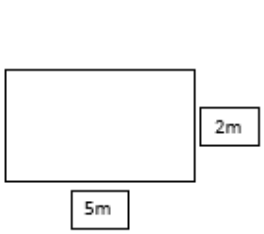

To get from 32cm to 16cm you divide by 2. So the scale factor is 1/2.

To work out x

8 / 2 = 4

x = 4cm

**Your turn:**





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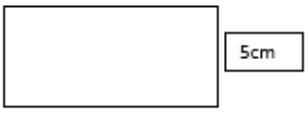
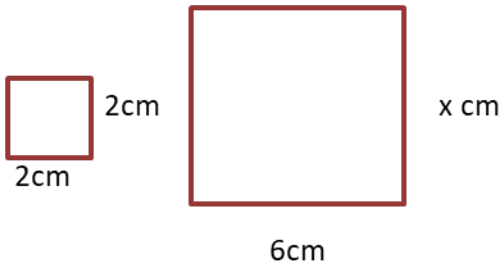


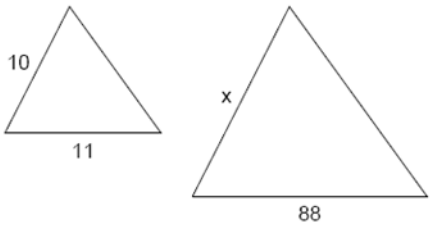

## Fluency

All shapes in section A are similar. Write the scale factor. Work out the missing length.

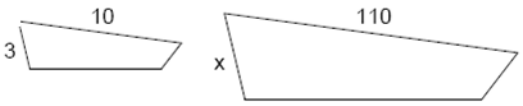
1)



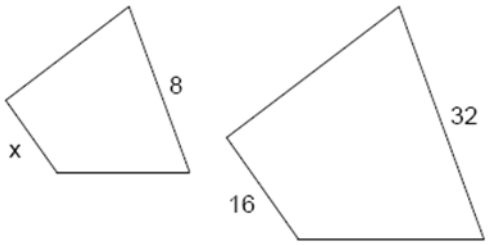

2)



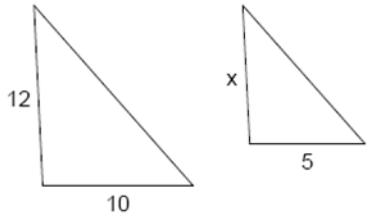

3)



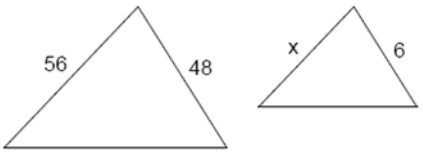

4)



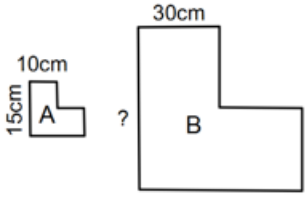

5)



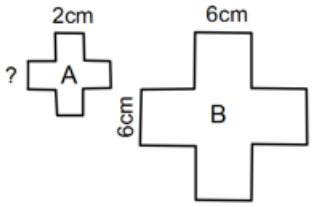

6)



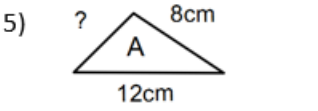

3)

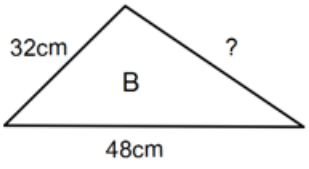



4)




5)

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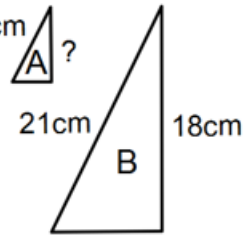


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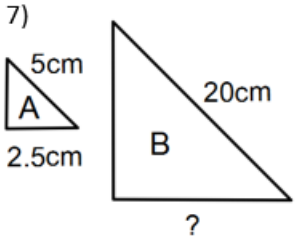
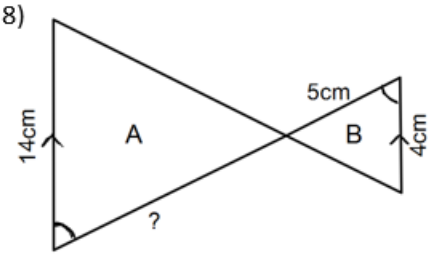
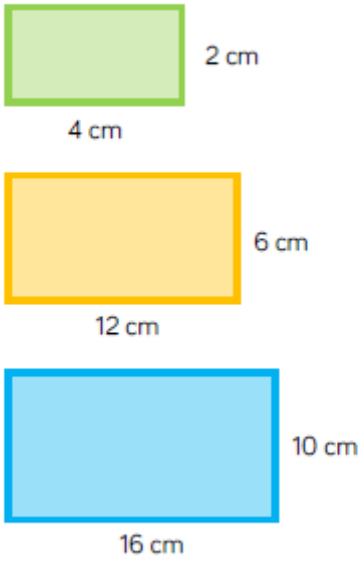



8)



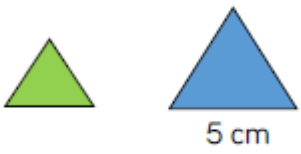
Explain it! **Problem Solving and Reasoning**

Tom says that each of these rectangles is an enlarged version of one of the others.



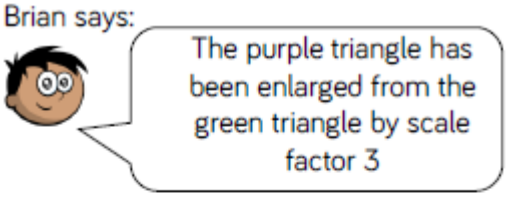

Do you agree?
Explain your answer.

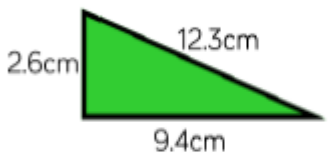
Here are two equilateral triangles.
The blue triangle is three times larger than the green triangle.

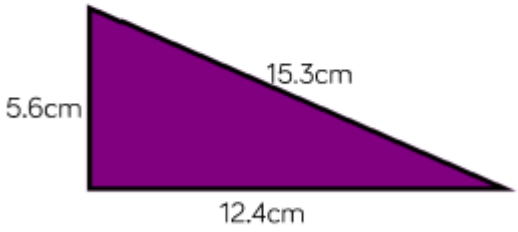



Find the perimeter of both triangles

Brian says:




Do you agree?
Explain why.

## Fluency Answers

1. SF = 3 x = 6cm
2. SF = 8 x = 80cm
3. SF = 11 x = 33cm
4. SF = 1/4 x = 4cm
5. SF = 1/2 x = 6cm
6. SF = 1/8 x = 7cm
7. SF = 3 ? = 45cm
8. SF = 4 ? = 8cm
9. SF = 4 ? = 10cm
10. SF = 1/3 ? = 2cm
11. SF = 1/3 ? = 6cm
12. SF = 2.5 ? = 12.5cm

## Problem solving and reasoning answers

| Answers |
| --- |
| Tom is wrong. The orange rectangle is an enlarged version of the green with scale factor 3, but the blue rectangle is not similar because the same amount has been added to the sides and they should be multiplied or divided to be enlarged. |
| The blue triangle has a perimeter of 15 cm.<br>The green triangle has a perimeter of 5 cm |
| Possible answer<br>I do not agree because Brian has increased the green shape by adding 3cm to each side, not increasing it by a scale factor of 3 |

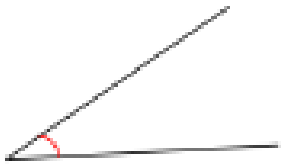
| Date | |
|---|---|
| Subject/s | Maths |
| Learning Objective  | To recall and use multiplication and division facts |

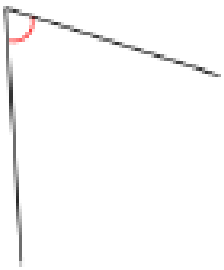
| | | | |
|---|---|---|---|
| 3 x 4 = | 7 x 8 = | 9 ÷ 3 = | 36 ÷ 12 = |
| 21 ÷ 7 = | 8 x 6 = | 12 x 4 = | 10 x 8 = |
| 4 x 8 = | 3 x 9 = | 4 x 7 = | 3 x 11 = |
| 40 ÷ 8 = | 15 ÷ 3 = | 27 ÷ 9 = | 20 ÷ 4 = |
| 4 x 11 = | 48 ÷ 6 = | 8 ÷ 4 = | 6 x 8 = |
| 5 x 8 = | 11 x 3 = | 5 x 8 = | 80 ÷ 10 = |
| 24 ÷ 4 = | 88 ÷ 11 = | 24 ÷ 3 = | 4 x 1 = |
| 72 ÷ 8 = | 8 x 4 = | 9 x 4 = | 8 x 5 = |
| 10 x 3 = | 16 ÷ 4 = | 8 x 11 = | 6 x 4 = |
| 5 x 4 = | 32 ÷ 8 = | 6 ÷ 3 = | 3 ÷ 3 = |
| 12 ÷ 3 = | 3 x 6 = | 48 ÷ 12 = | 44 ÷ 11 = |
| 4 x 9 = | 8 ÷ 8 = | 3 x 4 = | 7 x 3 = |
| 11 x 8 = | 4 x 3 = | 0 x 8 = | 12 x 8 = |
| 3 x 12 = | 48 ÷ 8 = | 18 ÷ 3 = | 28 ÷ 4 = |
| 24 ÷ 8 = | 30 ÷ 10 = | 3 x 3 = | 56 ÷ 7 = |
| 27 ÷ 3 = | 8 x 9 = | 64 ÷ 8 = | 4 x 12 = |
| 7 x 4 = | 10 x 4 = | 36 ÷ 4 = | 5 x 3 = |
| 36 ÷ 9 = | 16 ÷ 8 = | 8 x 8 = | 56 ÷ 7 = |
| 56 ÷ 8 = | 8 x 3 = | 21 ÷ 3 = | 4 x 6 = |
| 3 x 0 = | 72 ÷ 9 = | 4 x 12 = | 32 ÷ 4 = |
| 12 ÷ 4 = | 3 x 8 = | 96 ÷ 12 = | 12 x 3 = |
| 33 ÷ 3 = | 4 x 4 = | 24 ÷ 8 = | 7 x 8 = |
| 6 x 3 = | 9 x 8 = | 2 x 3 = | 9 x 3 = |
| 40 ÷ 4 = | 4 ÷ 4 = | 11 x 4 = | 21 ÷ 3 = |
| 28 ÷ 7 = | 3 x 7 = | 32 ÷ 8 = | 8 x 12 = |

| | | | |
|---|---|---|---|
| Date | | | |
| Subject/s | **Maths** | | |
| Learning Objective  | To estimate and compare angles | | |
| | | | |
| | | SA  | TA  |
| Success Criteria  | I know what acute, obtuse and reflex angles are | | |
| | I can visualise a right angle | | |
| | I can estimate angles when I know that a straight line is 180 degrees and a right angle is 90degrees. | | |
| Support | Independent Adult Support ( ) Group Work | | |

Pre-task:

Are the angles below obtuse, reflect or acute? Estimate the size of the angle.

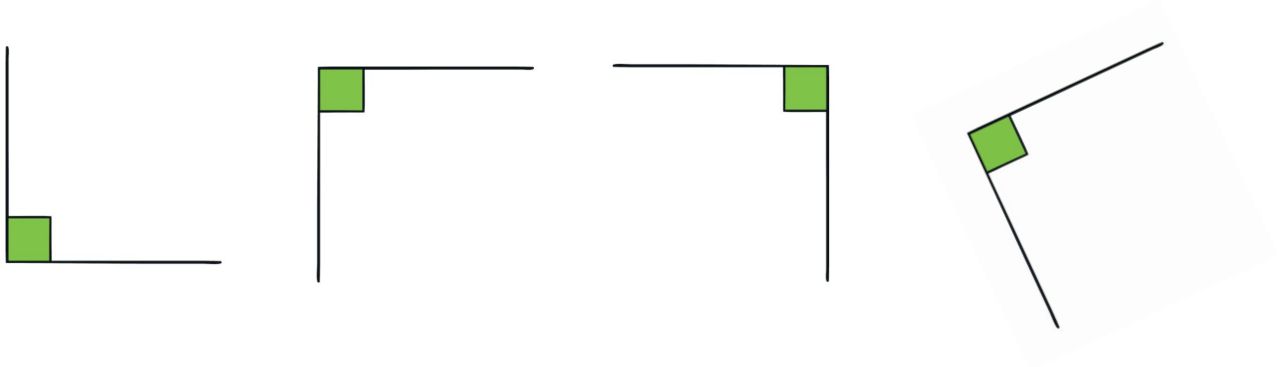




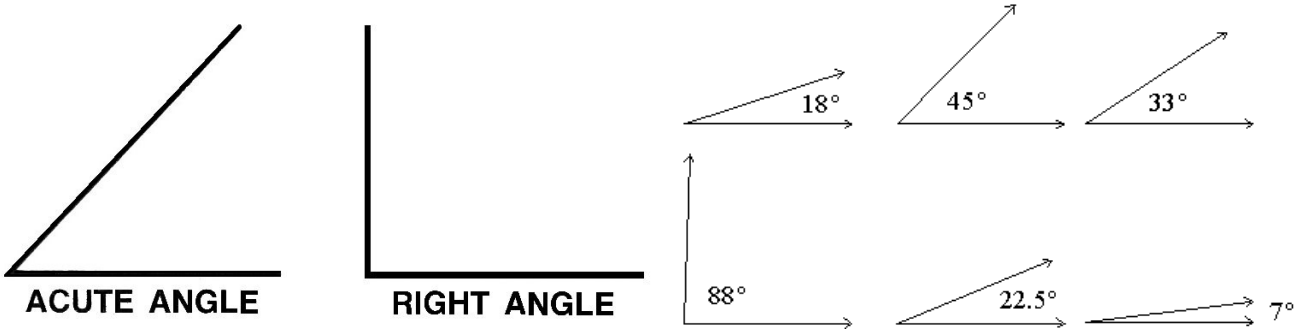
## Teacher Led

What is an angle? https://www.bbc.co.uk/bitesize/topics/zb6tyrd/articles/zg68k7h

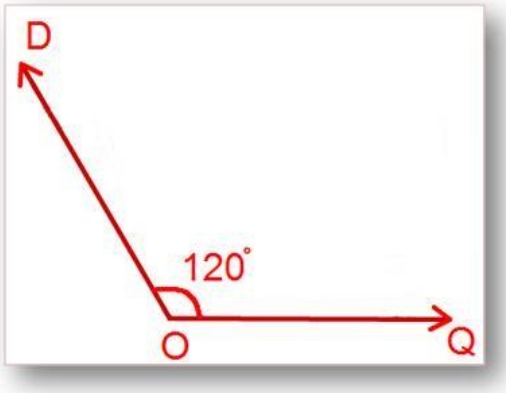
90 degrees is a right angle. It makes an L shape. It be upside down or back to front.



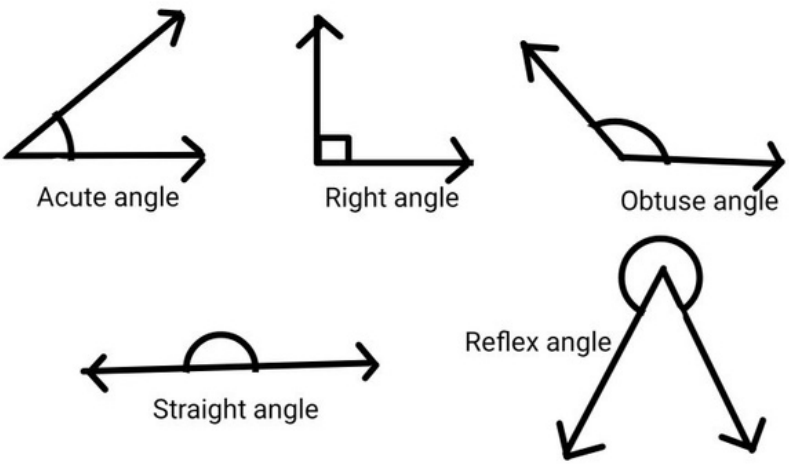
Acute angles are smaller than a right angle (90 degrees). They are smaller than the 'L shape'.

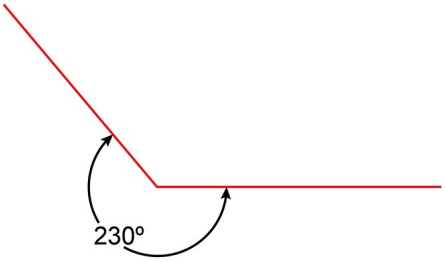



Obtuse angles are bigger than a right angle (90 degrees) but less than 180 degrees (a straight line). They are bigger than the 'L shape'



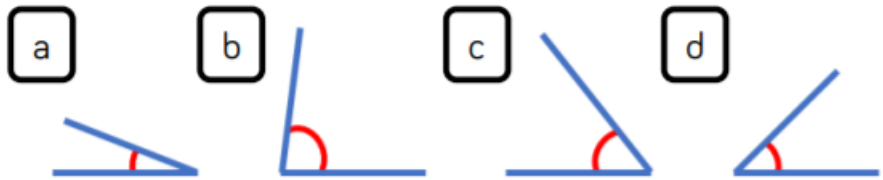

A reflex angle is more than a straight line (180 degrees)



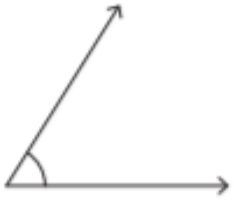
**Your turn**

Put these angles in order of size. Explain how you know.




Are the angles below acute, right or obtuse? Estimate their size. Remember a right angle is 90 degrees and a straight line is 180 degrees.

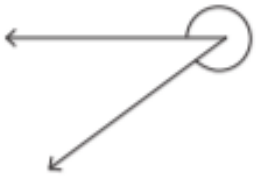
1)



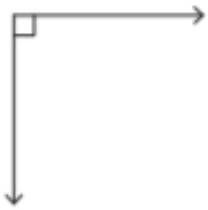
2)

3)

4)



5)

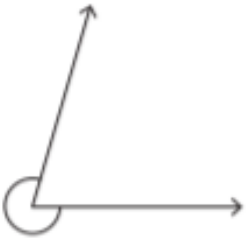


6)

7)

8)

9)

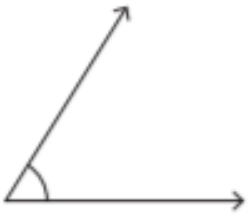


10)

11)

12)

1)

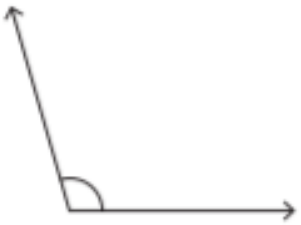


Acute angle

2)

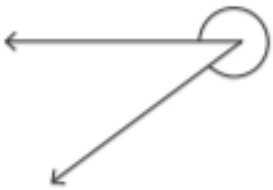
Straight angle

3)



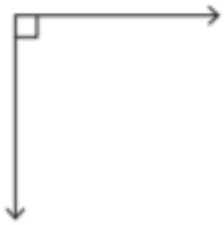
Obtuse angle

4)



Reflex angle

5)



Right angle

6)

Acute angle

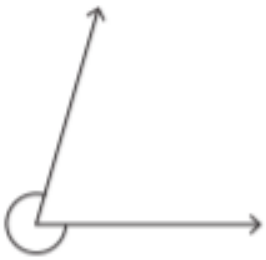
7)

Obtuse angle

8)

Acute angle

9)



Reflex angle

10)

Straight angle

11)

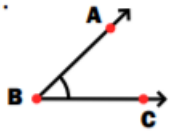
Reflex angle

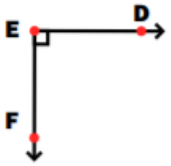
12)

Right angle

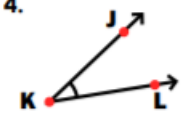
## Fluency

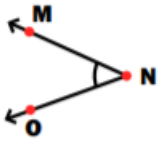
**Label each angle as acute, obtuse, or right.**

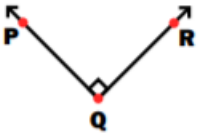
1. 

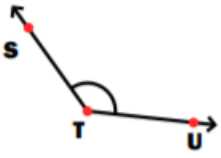

2. 

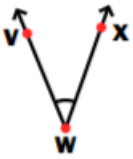

3. 


4. 

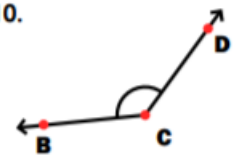

5. 

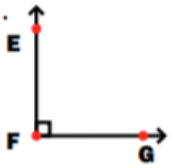

6. 

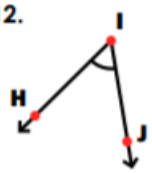

7. 


8. 


9. 


10. 


11. 


12. 


**Key**

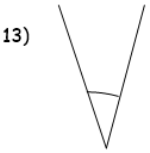
Acute

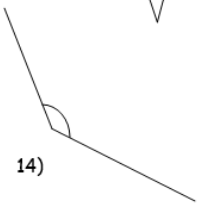
Obtuse

Right angle

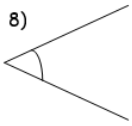
Acute angles are less than/more than 90°.
Obtuse angles are less than/more than 90°, but less than/more than 180°.

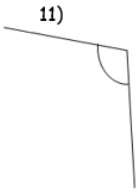
- Choose 3 colours, fill in the key, then colour the angles as appropriate.
- Estimate the sizes of the angles by comparing them to right angles and straight lines.
- Use a protractor to measure the angles.



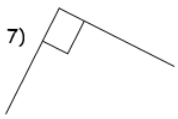



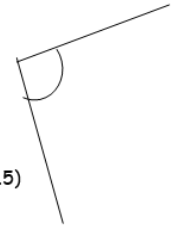


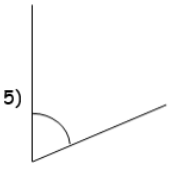


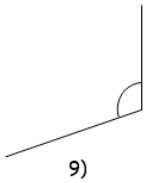



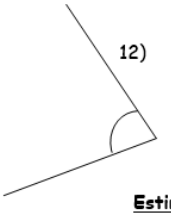


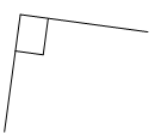


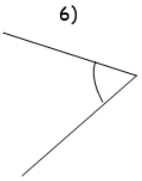



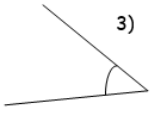



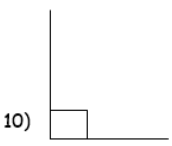



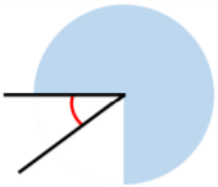




**Estimates:**

| | | |
|---|---|---|
| 1) | 6) | 11) |
| 2) | 7) | 12) |
| 3) | 8) | 13) |
| 4) | 9) | 14) |
| 5) | 10) | 15) |

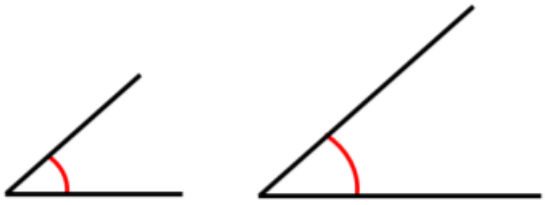
Problem Solving and Reasoning

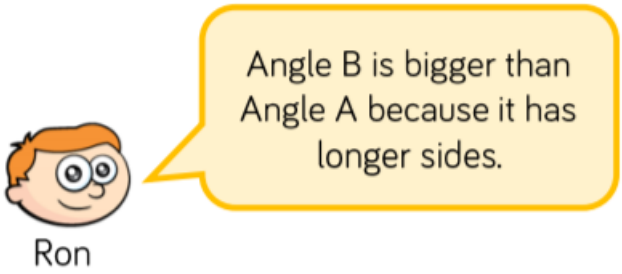
Identify obtuse angles in the image.
Estimate the size of the angles, and then measure them.



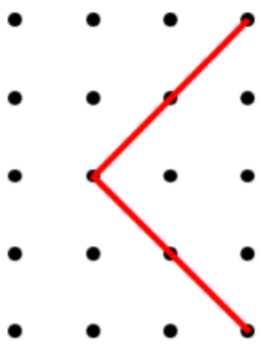



Who is correct?
Explain your reasons.



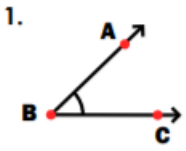

Do you agree with Ron? Explain your thinking.



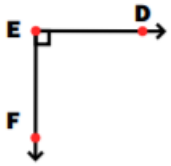
Is the angle acute, obtuse or a right angle?
Can you explain why?

## Answers

**Label each angle as acute, obtuse, or right.**

1. 

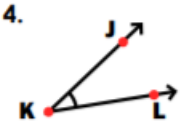
acute

2. 

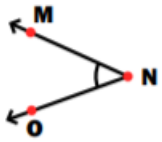
right

3. 

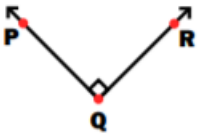
obtuse

4. 

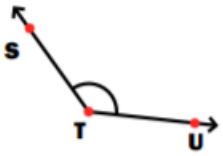
acute

5. 

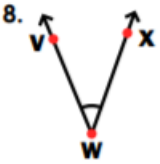
acute

6. 

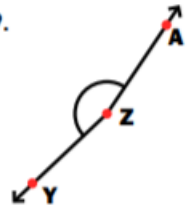
right

7. 

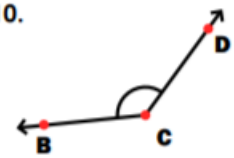
obtuse

8. 

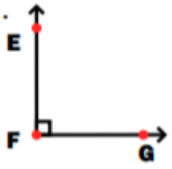
acute

9. 

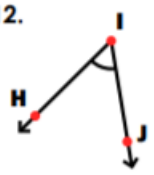
obtuse

10. 

obtuse

11. 

right

12. 

acute

1. Obtuse
2. Right
3. Acute
4. Obtuse
5. Acute
6. Acute
7. Right
8. Acute
9. Obtuse
10. Right
11. Obtuse
12. Acute
13. Acute
14. Obtuse
15. Obtuse

No answers for the picture

All are correct. Children may reason about how Whitney has come to her answer and discuss that the angle is about half a right angle. Half of 90 degrees is 45 degrees.

The angle is a right angle. Children may use an angle tester to demonstrate it, or children may extend the line to show that it is a quarter turn which is the same as a right angle.

Angle A and Angle B are the same size. Ron has mixed up the lengths of the lines with the size of the angles.

| Date | |
|---|---|
| Subject/s | Maths |
| Learning Objective  | To recall and use multiplication and division facts |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 9 X 7 | | 30 | 6 x 9 | | 59 | 9 X 4 | |
| 2 | 8 x 4 | | 31 | 12 x 3 | | 60 | 7 x 6 | |
| 3 | 7 x 10 | | 32 | 3 x 8 | | 61 | 4 x 8 | |
| 4 | 9 x 9 | | 33 | 8 X 8 | | 62 | 12 X 2 | |
| 5 | 6 x 2 | | 34 | 6 x 8 | | 63 | 3 x 6 | |
| 6 | 4 x 7 | | 35 | 11 x 7 | | 64 | 4 x 10 | |
| 7 | 9 X 2 | | 36 | 10 x 1 | | 65 | 9 x 11 | |
| 8 | 12 x 12 | | 37 | 10 x 5 | | 66 | 3 x 12 | |
| 9 | 5 X 9 | | 38 | 3 x 5 | | 67 | 3 x 10 | |
| 10 | 7 X 7 | | 39 | 12 x 11 | | 68 | 4 X 4 | |
| 11 | 11 x 6 | | 40 | 6 x 6 | | 69 | 4 x 9 | |
| 12 | 5 x 11 | | 41 | 2 x 9 | | 70 | 4 x 11 | |
| 13 | 4 x 6 | | 42 | 12 x 7 | | 71 | 6 x 5 | |
| 14 | 9 x 5 | | 43 | 11 x 8 | | 72 | 7 x 2 | |
| 15 | 8 X 12 | | 44 | 2 x 6 | | 73 | 5 x 12 | |
| 16 | 10 x 10 | | 45 | 4 x 5 | | 74 | 2 x 10 | |
| 17 | 7 x 3 | | 46 | 4 x 9 | | 75 | 4 x 12 | |
| 18 | 5 x 8 | | 47 | 8 x 2 | | 76 | 7 x 8 | |
| 19 | 3 x 3 | | 48 | 7 x 9 | | 77 | 6 x 10 | |
| 20 | 10 x 11 | | 49 | 12 x 8 | | 78 | 12 x 6 | |
| 21 | 11 x 2 | | 50 | 9 X 4 | | 79 | 7 x 12 | |
| 22 | 2 x 7 | | 51 | 5 X 5 | | 80 | 2 X 2 | |
| 23 | 6 x 12 | | 52 | 10 x 12 | | 81 | 11 x 0 | |
| 24 | 5 x 7 | | 53 | 8 x 11 | | 82 | 2 x 12 | |
| 25 | 10 x 6 | | 54 | 4 x 3 | | 83 | 2 X 4 | |
| 26 | 9 x 12 | | 55 | 2 x 5 | | 84 | 8 x 5 | |
| 27 | 5 x 4 | | 56 | 5 x 10 | | 85 | 7 x 11 | |
| 28 | 11 x 11 | | 57 | 9 x 3 | | 86 | 9 x 6 | |
| 29 | 7 x 4 | | 58 | 8 x 10 | | 87 | 10 x 11 | |

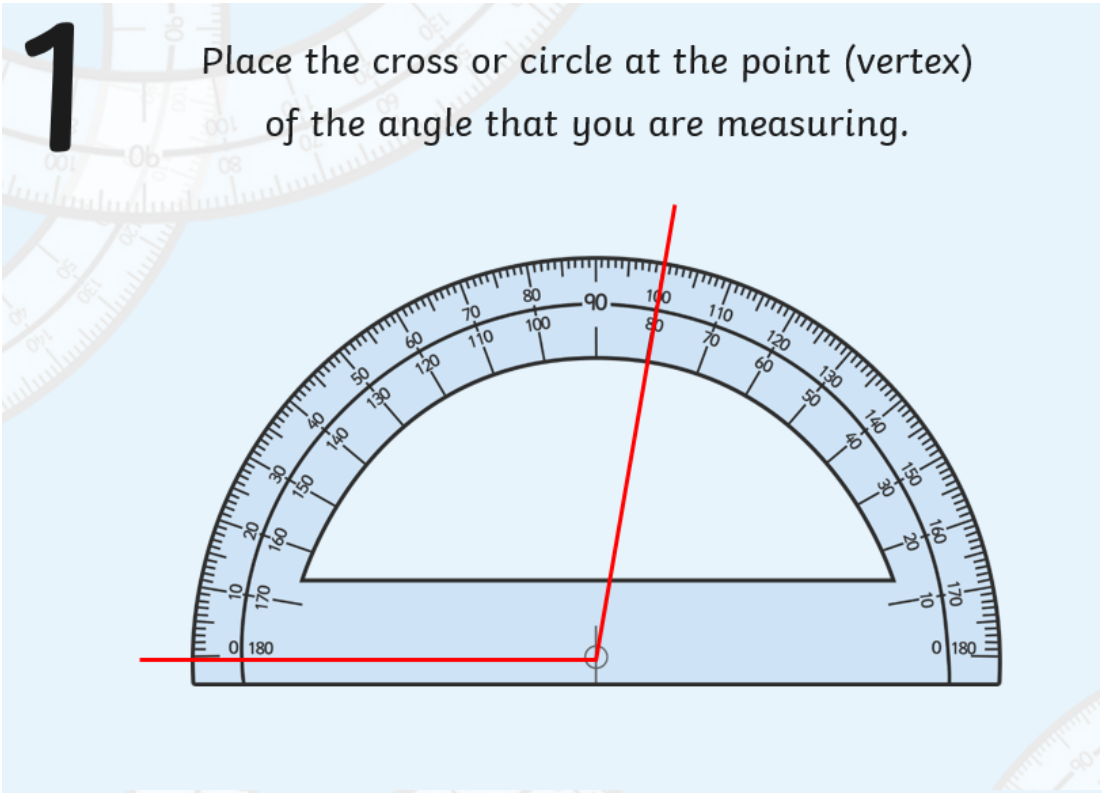
| | | | |
|---|---|---|---|
| Date | | | |
| Subject/s | **Maths** | | |
| Learning Objective  | To use a protractor | | |
| | | | |
| | | SA  | TA  |
| Success Criteria  | I know the protractor measures angles | | |
| | I know an angle is the amount of turn | | |
| | I can line the protractor up with the vertex of the angle to measure it | | |
| Support | Independent Adult Support ( ) Group Work | | |

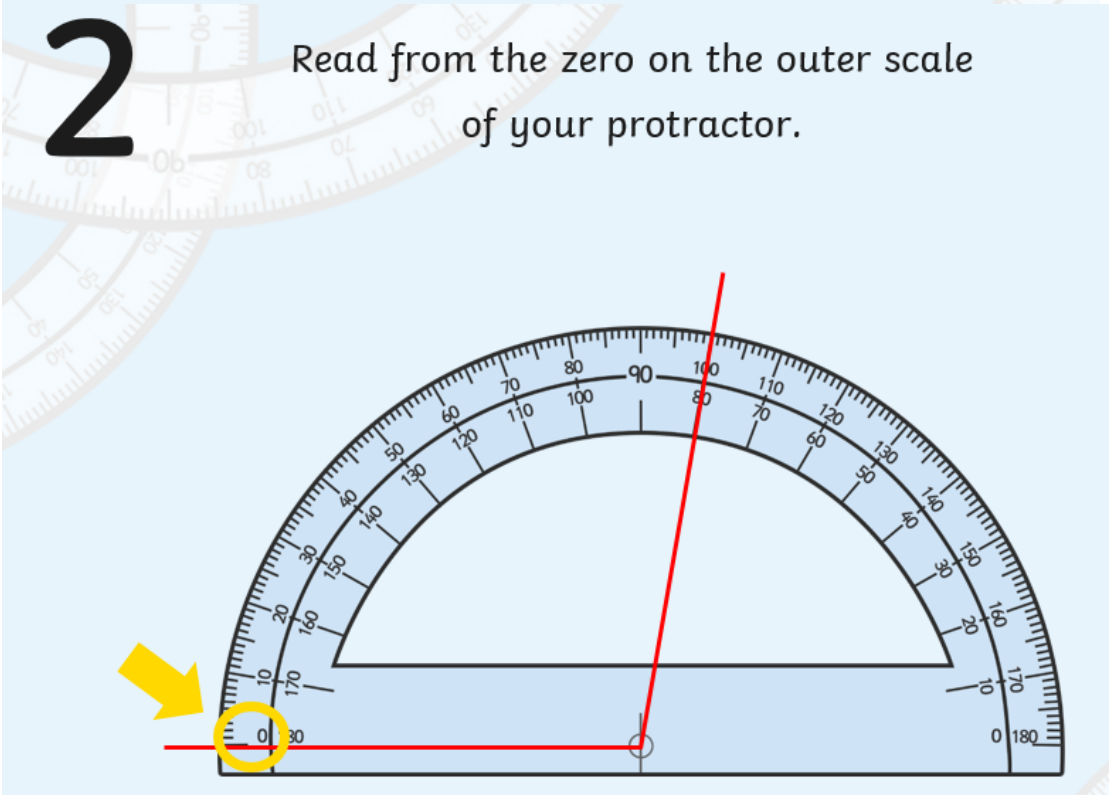
Pre-task:

Measure the angles

## Teacher Led

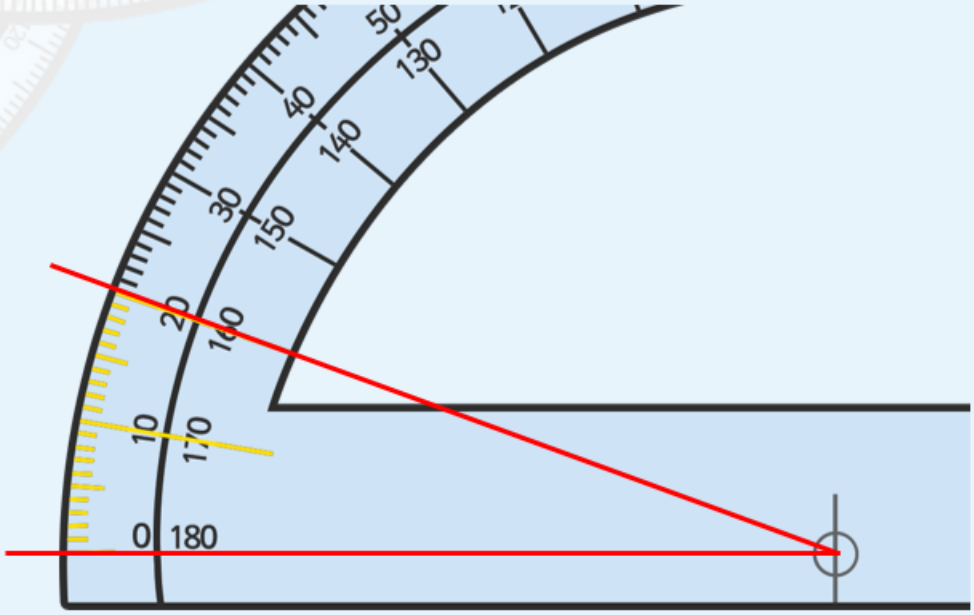
How to use a protractor https://www.youtube.com/watch?v=3QRRdAaLZBA



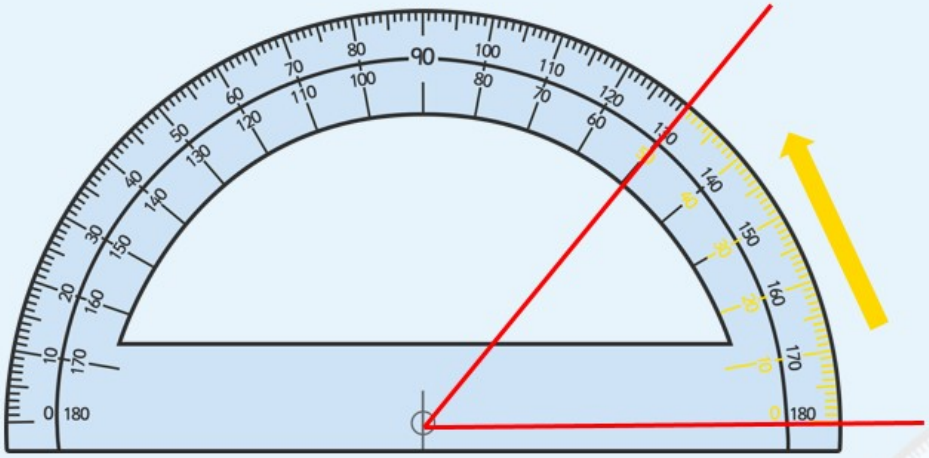
# 3

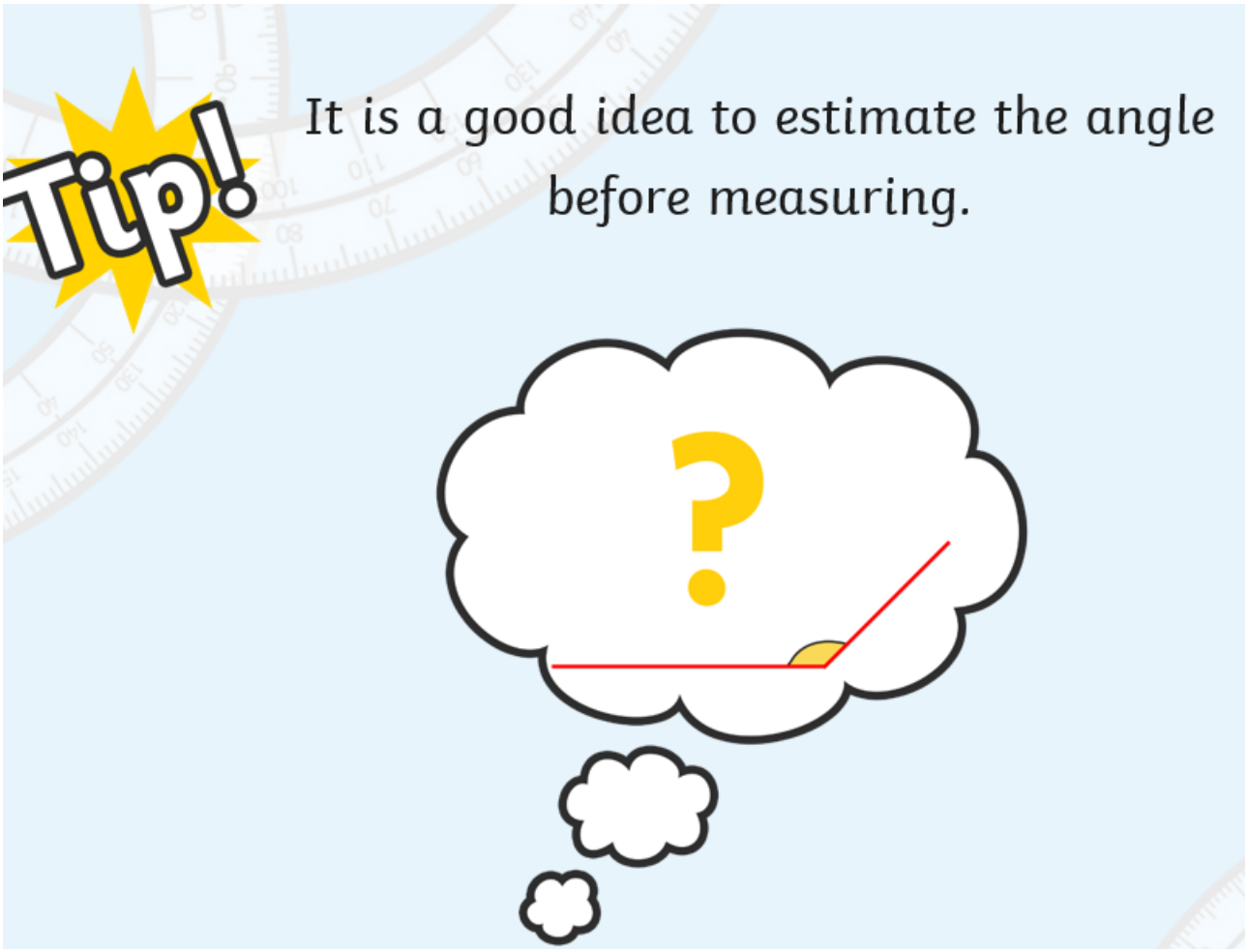
Count the degree lines carefully.




# 4

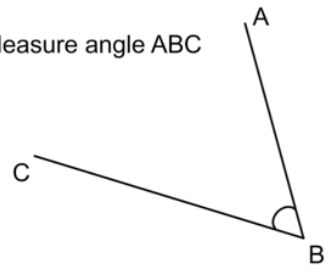
If the angle that you are measuring turns in an anti-clockwise direction, you will need to use the inner scale of your protractor.



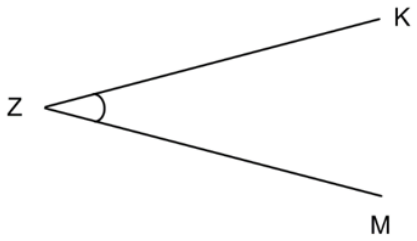



Your turn

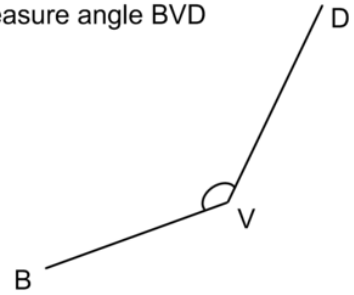
1) Measure angle ABC



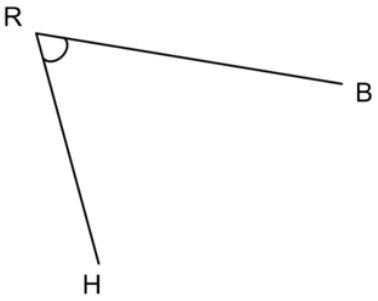

2) Measure angle KZM



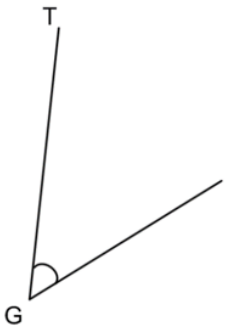

3) Measure angle BVD



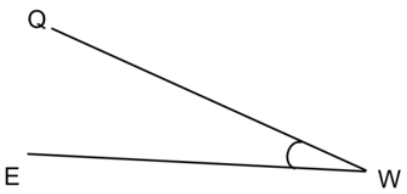

4) Measure angle HRB




5) Measure angle TGF

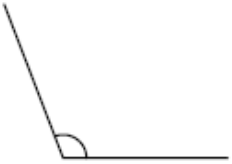



6) Measure angle EWQ

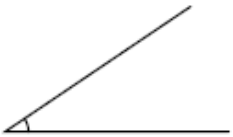


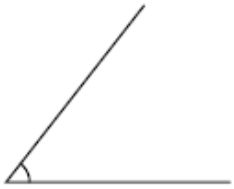
## Fluency

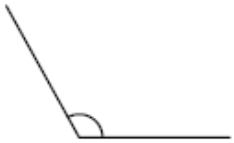
(1)  This angle is ____ degrees.

(2)  This angle is ____ degrees.

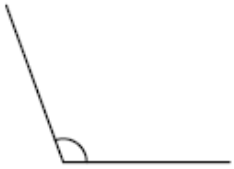
(3)  This angle is ____ degrees.

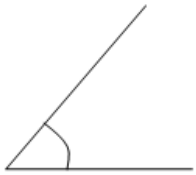
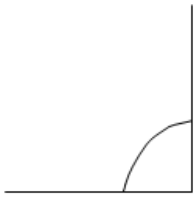
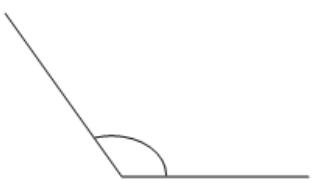
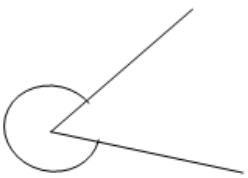
(4)  This angle is ____ degrees.

(6)  This angle is ____ degrees.

(7)  This angle is ____ degrees.

(8)  This angle is ____ degrees.

(9)  This angle is ____ degrees.

| | | | |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

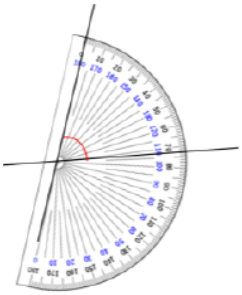
## Problem Solving and Reasoning

Which angle is the odd one out?

180° 45° 79° 270°

Could another angle be the odd one out for a different reason?

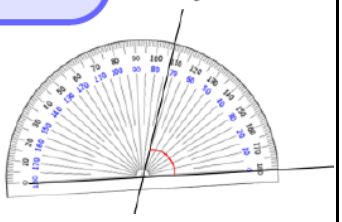
Evie



I have measured the angle correctly because my protractor is on the line accurately.

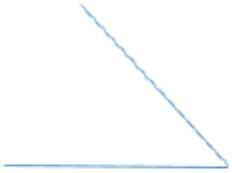
I have measured the angle correctly because my protractor is the right way round.

Byron



Who do you agree with?
Explain why.

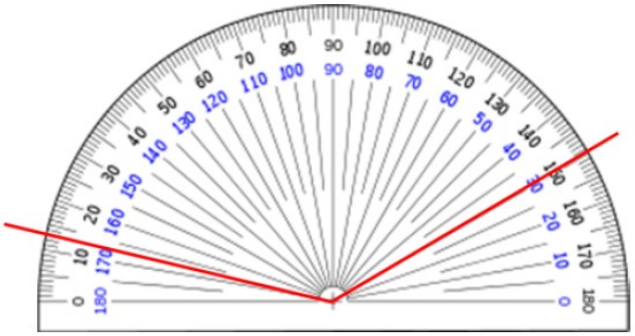
Alex measures this angle:



He says it is 130°

How do you know Alex is definitely wrong?
Explain what he has done wrong.

How many ways can you find the value of the angle?



**Answers**

| |
|---|
| 79° is the odd one out because the others are all common angles. They would appear as a compass point. Other answers possible. |
| They are both correct. It doesn't matter which way the protractor is as long as it is placed on the angle correctly. |
| Alex is definitely wrong because 130σ is an obtuse angle and the angle drawn is acute.<br>He has read the wrong scale on the protractor. He should have measured the angle to be 50σ |
| Children may subtract 150 – 13 = 137° Children may add up on the protractor as a number line e.g. +7 +100 +30 = 137 ° Discuss similarities and differences |

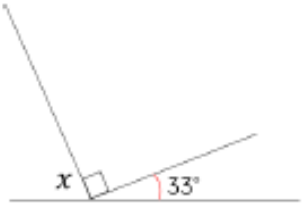
| Date | |
|---|---|
| Subject/s | Maths |
| Learning Objective  | To recall and use multiplication and division facts |

| | | | |
|---|---|---|---|
| 2 x 2 = | 3 x 3 = | 4 x 4 = | 11 x 10 = |
| 3 x 5 = | 6 x 8 = | 7 x 5 = | 10 x 2 = |
| 4 x 6 = | 12 x 5 = | 8 x 12 = | 3 x 12 = |
| 7 x 4 = | 8 x 6 = | 10 x 11 = | 4 x 9 = |
| 10 x 10 = | 10 x 12 = | 4 x 2 = | 5 x 7 = |
| 9 x 3 = | 11 x 2 = | 10 x 3 = | 9 x 8 = |
| 7 x 2 = | 3 x 9 = | 6 x 8 = | 10 x 7 = |
| 11 x 3 = | 4 x 11 = | 12 x 10 = | 7 x 8 = |
| 10 x 5 = | 2 x 5 = | 2 x 11 = | 4 x 3 = |
| 2 x 4 = | 6 x 10 = | 8 x 3 = | 12 x 4 = |
| 5 x 6 = | 10 x 9 = | 3 x 4 = | 5 x 8 = |
| 7 x 10 = | 2 x 12 = | 4 x 5 = | 8 x 8 = |
| 9 x 2 = | 5 x 3 = | 7 x 8 = | 12 x 2 = |
| 3 x 11 = | 9 x 4 = | 8 x 10 = | 5 x 4 = |
| 10 x 4 = | 5 x 5 = | 2 x 8 = | 9 x 5 = |
| 8 x 5 = | 8 x 8 = | 8 x 0 = | 8 x 11 = |
| 9 x 8 = | 9 x 10 = | 4 x 12 = | 2 x 10 = |
| 4 x 10 = | 5 x 2 = | 12 x 8 = | 4 x 7 = |
| 3 x 2 = | 6 x 3 = | 3 x 6 = | 11 x 5 = |
| 7 x 3 = | 6 x 4 = | 5 x 10 = | 2 x 3 = |
| 4 x 8 = | 5 x 11 = | 8 x 2 = | 8 x 9 = |
| 5 x 9 = | 2 x 6 = | 3 x 7 = | 8 x 4 = |
| 12 x 8 = | 3 x 10 = | 11 x 4 = | 11 x 8 = |
| 2 x 9 = | 2 x 7 = | 5 x 12 = | 12 x 3 = |
| 10 x 8 = | 3 x 8 = | 0 x 4 = | 8 x 7 = |

| | | | |
|---|---|---|---|
| Date | | | |
| Subject/s | **Maths** | | |
| Learning Objective  | To work out angles on a straight line | | |
| | | | |
| | | SA  | TA  |
| Success Criteria  | I know angles on a straight line add to 180° | | |
| | I know to add the angles I already know | | |
| | I know to subtract the amount from 180degrees using mental maths or column subtraction | | |
| Support | Independent Adult Support ( ) Group Work | | |

Pre-task:

Calculate the missing angle **x**

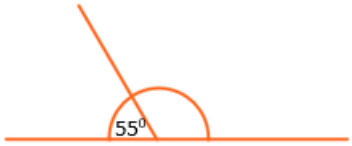


**Teacher Led**

Angles on a straight line add to 180 degrees.

To work out the missing angle below I need to subtract 55 degrees from 180degrees because I know both numbers together must add to 180degrees.

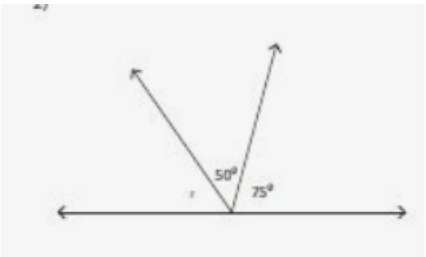
180—55 = 125 degrees




On the straight line below, there are three angles in total which must all add up to 180 degrees as it is a straight line. So I need to add up what I know and then subtract it from 180degrees.

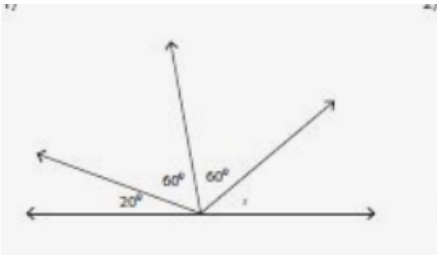
50 + 75 = 125 degrees

180—125 = 55 degrees

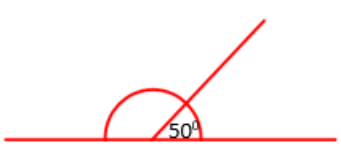


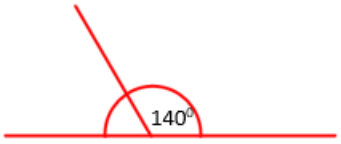

Add up what I know: 60 + 60 + 20 = 140

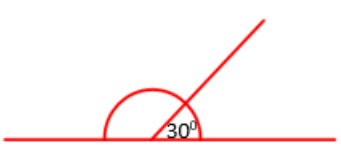
Subtract from 180: 180—140 = 40 degrees



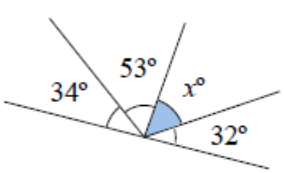

Your turn:



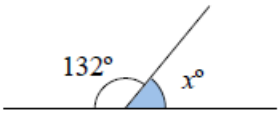




**B4** Find the value $x$

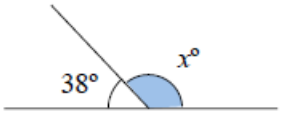


## Fluency

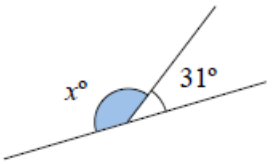
**A1** Find the value $x$



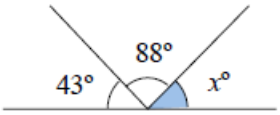

**A2** Find the value $x$



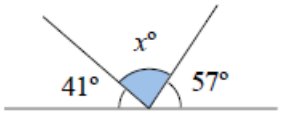

**A3** Find the value $x$



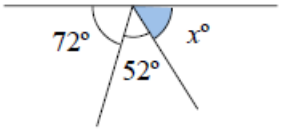

**B1** Find the value $x$



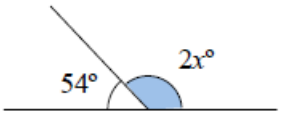

**B2** Find the value $x$



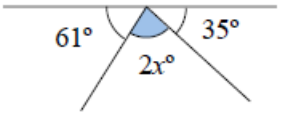

**B3** Find the value $x$



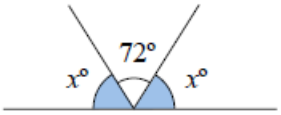

**A1** Find the value $x$




**A2** Find the value $x$




**A3** Find the value $x$

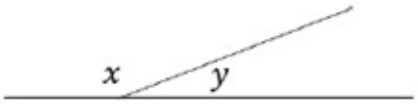


# Problem Solving and Reasoning

Problem Solving and Reasoning

Use it!

Here are two angles.

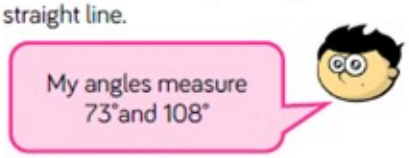



Use the clues to calculate what the missing angles could be worth.

Angle $x$ is larger than 130°
Angle $y$ is a prime number between 40 and 50

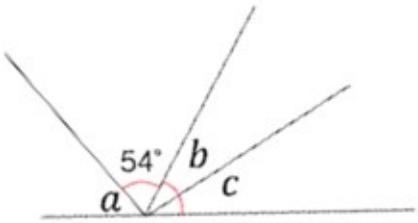
Explain it!

Bradley is measuring two angles on a straight line.




Explain why Bradley's angles must be wrong.

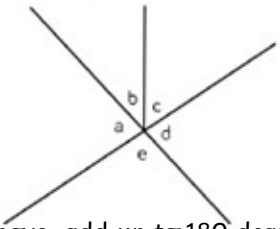
Use it!




- The total of angle $b$ and $c$ are the same as angle $a$
- Angle $a$ is 9° more than the size of the given angle.
- Angle $b$ is 11° more than angle $c$

What are the angles worth?

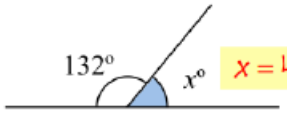
Use it!




What angles above add up to 180 degrees? How many different solutions are there?

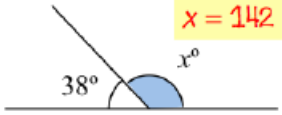
## Answers

**A1** Find the value $x$



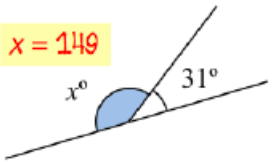

$x = 48$

**A2** Find the value $x$



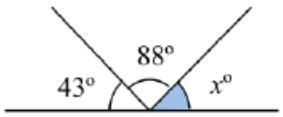

$x = 142$

**A3** Find the value $x$



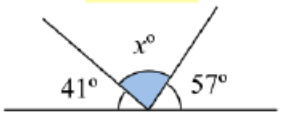

$x = 149$

**B1** Find the value $x$



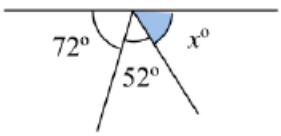

$x = 49$

**B2** Find the value $x$




$x = 82$

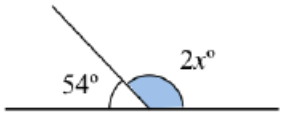
**B3** Find the value $x$




$x = 56$

**A1** Find the value $x$

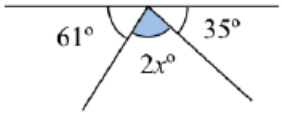
$2x = 126$




$x = 63$

**A2** Find the value $x$

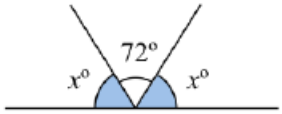
$2x = 84$




$x = 42$

**A3** Find the value $x$

$2x = 108$




$x = 54$

## Problem solving and reasoning answers

| |
|---|
| $y = 41^\circ$, $x = 139^\circ$<br>$y = 43^\circ$, $x = 137^\circ$<br>$y = 47^\circ$, $x = 133^\circ$ |
| His angles total more than 180° He must have measured incorrectly. |
| $a = 63^\circ$<br>$b = 37^\circ$<br>$c = 26^\circ$ |
| Various answers |