

Reasoning and Problem Solving

Step 4: Drawing Lines and Angles Accurately

Teaching note:

Please note that precise measurements are dependent upon printer settings.

National Curriculum Objectives:

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

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Draw the missing angle in a sequence. Angles are multiples of 5° . One line horizontal and all angles measured using the outer part of a protractor.

Expected Draw the missing angle in a sequence. Angles are multiples of 1° . Mostly horizontal lines used and most angles measured using the outer part of a protractor.

Greater Depth Draw the missing angle in a sequence. Angles are multiples of 1° . Diagonal lines used in various directions. Angles measured with both inner and outer parts of a protractor.

Questions 2, 5 and 8 (Reasoning)

Developing Find the odd one out after drawing three lines that are longer or shorter than a given line on a shown ruler. Lines given are multiples of 5mm and rulers start at a whole number.

Expected Find the odd one out after drawing three lines that are longer or shorter than a given line on a shown ruler. Lines given are multiples of 1mm and rulers start at increments of 0.5cm.

Greater Depth Find the odd one out after drawing three lines that are longer or shorter than a given line. Lines given are accurate to 1mm and rulers start at any number.

Questions 3, 6 and 9 (Problem Solving)

Developing Identify the line that is being described. 3 lines drawn. Increments of 5mm and 5° .

Expected Identify the line that is being described. 4 lines drawn. Increments of 1mm and 1° .

Greater Depth Identify the line that is being described. 4 lines drawn. Increments of 1mm and 1° . 2 angles given.

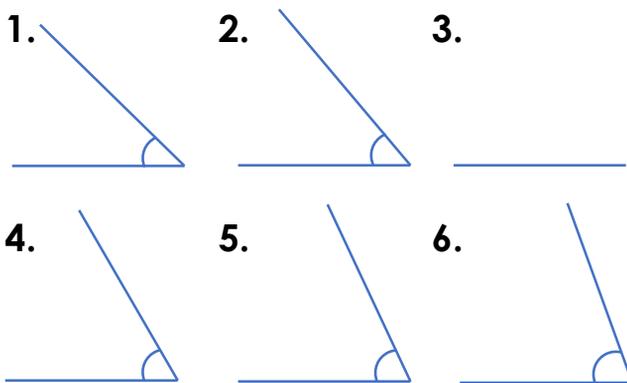
More [Year 5 Properties of Shapes](#) resources.

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Drawing Lines and Angles

Accurately

1a. Draw the missing angle in the sequence.

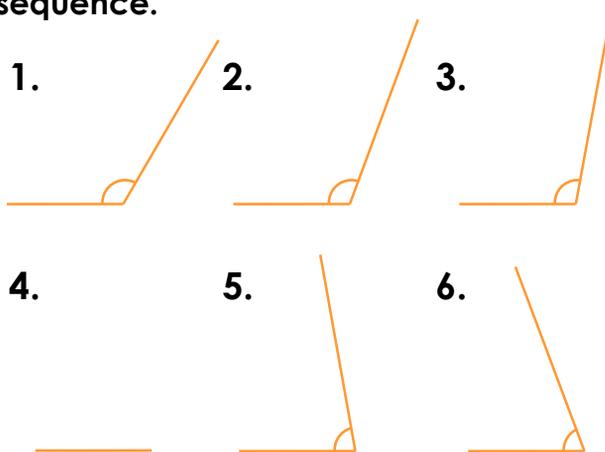


PS

Drawing Lines and Angles

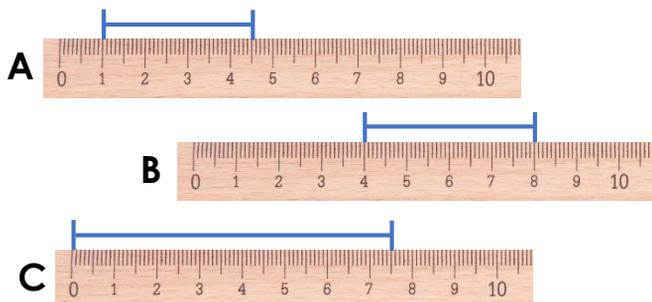
Accurately

1b. Draw the missing angle in the sequence.



PS

2a. Draw lines which are:
25mm longer than A
2cm 5mm longer than B
15mm shorter than C.

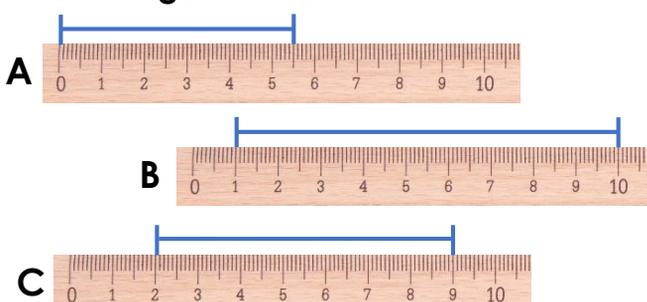


Which new line is an odd one out?
Convince me.



R

2b. Draw lines which are:
30mm longer than A
15mm shorter than B
1.5cm longer than C.

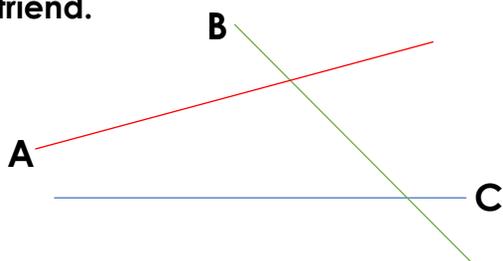


Which new line is an odd one out?
Convince me.



R

3a. Robbie has drawn some lines and angles. He is describing one of the lines to his friend.

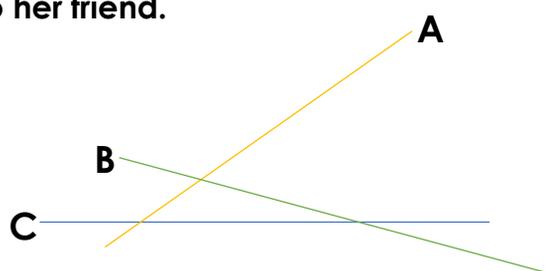


My line measures 5cm 5mm.
My line intersects another at 45° .
Which line is he describing?



PS

3b. Molly has drawn some lines and angles. She is describing one of the lines to her friend.



My line measures 60mm.
My line intersects another at 50° .
Which line is she describing?

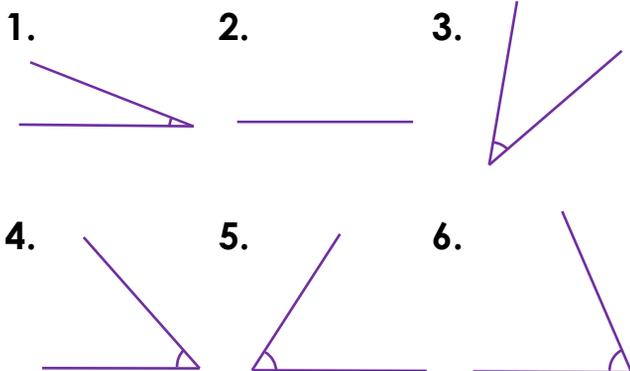


PS

Drawing Lines and Angles

Accurately

4a. Draw the missing angle in the sequence.

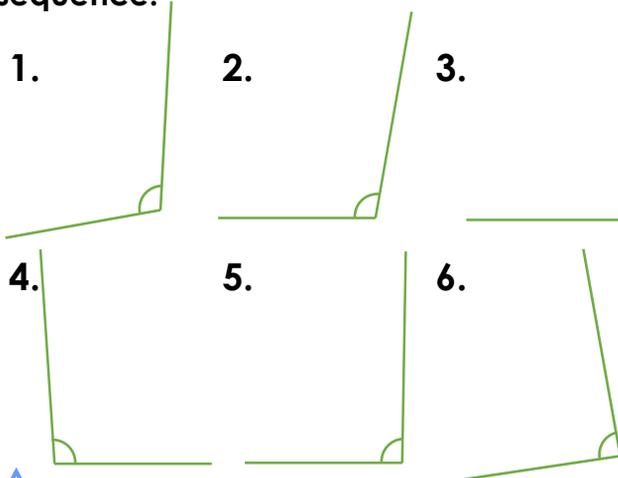


PS

Drawing Lines and Angles

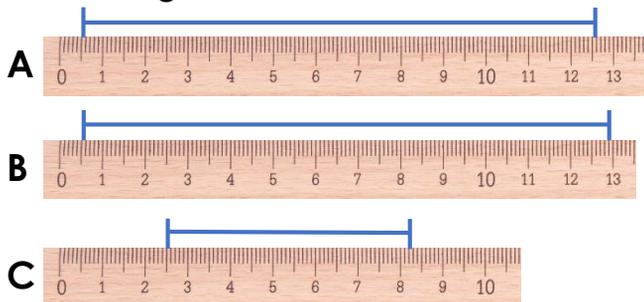
Accurately

4b. Draw the missing angle in the sequence.



PS

5a. Draw lines which are:
3mm longer than A
11mm shorter than B
56mm longer than C.

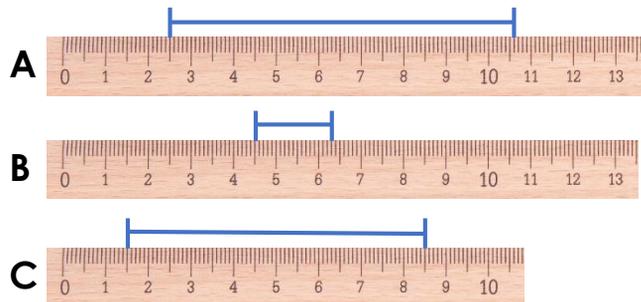


Which new line is odd one out?
Convince me.



R

5b. Draw lines which are:
35mm shorter than A
4cm 6mm longer than B
6mm shorter than C.

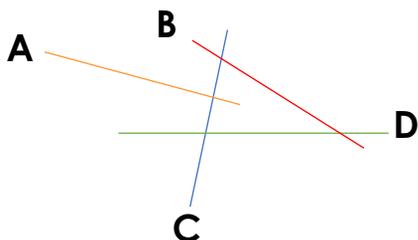


Which new line is odd one out?
Convince me.



R

6a. Sarah has drawn some lines and angles. She is describing one of the lines to her friend.

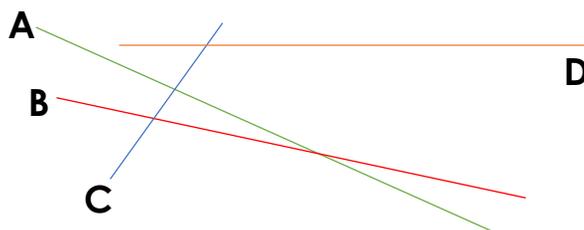


My line measures 24mm.
My line intersects another at 78° .
Which line is she describing?



PS

6b. Mustafa has drawn some lines and angles. He is describing one of the lines to his friend.



My line measures 6cm 4mm.
My line intersects another at 13° .
Which line is he describing?

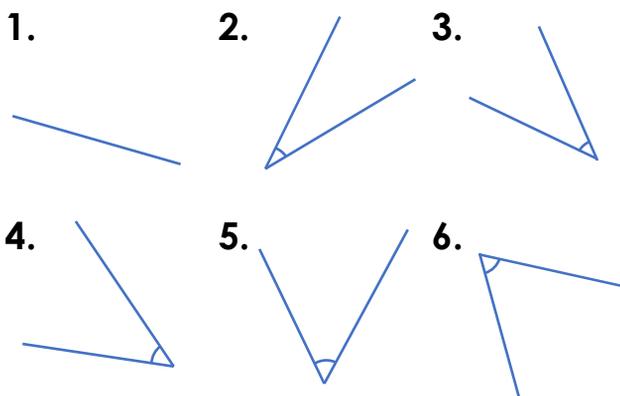


PS

Drawing Lines and Angles

Accurately

7a. Draw the missing angle in the sequence.

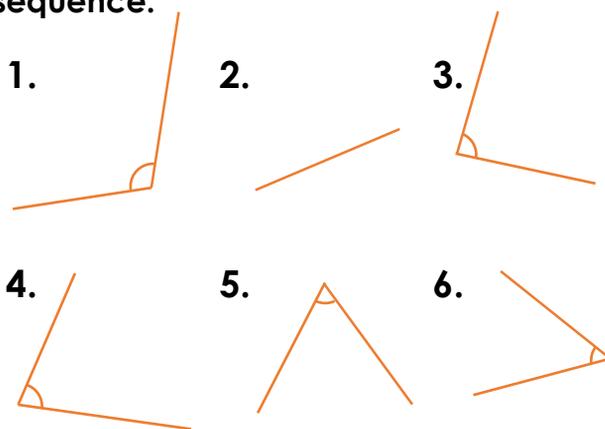


PS

Drawing Lines and Angles

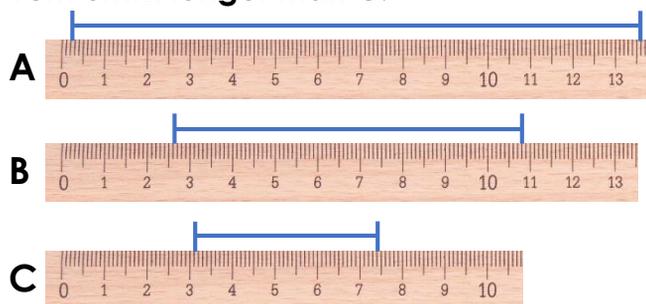
Accurately

7b. Draw the missing angle in the sequence.



PS

8a. Draw lines which are:
78mm shorter than A
2.4cm shorter than B
1cm 3mm longer than C.

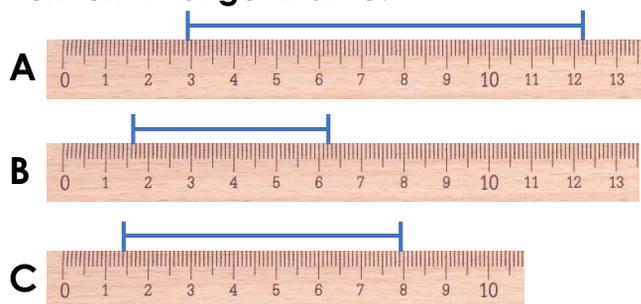


Which new line is odd one out?
Convince me.



R

8b. Draw lines which are:
4mm shorter than A
4.3cm longer than B
1cm 8mm longer than C.

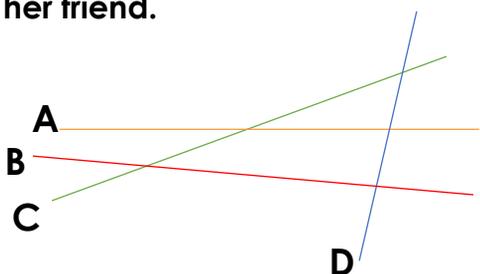


Which new line is odd one out?
Convince me.



R

9a. Laura has drawn some lines and angles. She is describing one of the lines to her friend.



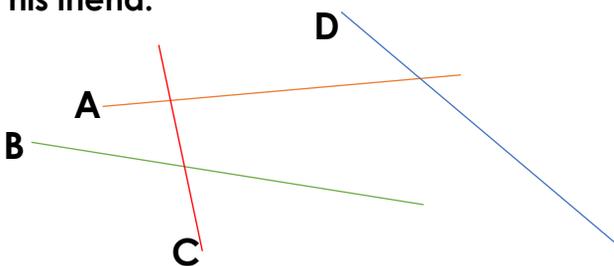
My line measures 56mm.
My line intersects another at 160° and another at 57° .

Which line is she describing?



PS

9b. Mohamud has drawn some lines and angles. He is describing one of the lines to his friend.



My line measures 4cm 8mm.
My line intersects another at 45° and another at 83° .

Which line is he describing?



PS

Reasoning and Problem Solving Drawing Lines and Angles Accurately

Developing

- 1a. Angle drawn: 55° as the sequence is $45^\circ, 50^\circ, 55^\circ, 60^\circ, 65^\circ, 70^\circ$ (+ 5° each time)
2a. B is the odd one out. A will be 6cm, B will be 6.5cm and C will be 6cm.
3a. C

Expected

- 4a. Angle drawn: 31° as the sequence is $22^\circ, 31^\circ, 40^\circ, 49^\circ, 58^\circ, 67^\circ$ (+ 9° each time)
5a. A is the odd one out. A will be 12.4cm, B will be 11.3cm and C will be 11.3cm.
6a. C

Greater Depth

- 7a. Angle drawn: 27° as the sequence is $27^\circ, 34^\circ, 41^\circ, 48^\circ, 55^\circ, 62^\circ$ (+ 7° each time)
8a. B is the odd one out. A will be 5.6cm, B will be 5.8cm and C will be 5.6cm.
9a. C

Reasoning and Problem Solving Drawing Lines and Angles Accurately

Developing

- 1b. Angle drawn: 90° as the sequence is $120^\circ, 110^\circ, 100^\circ, 90^\circ, 80^\circ, 70^\circ$ (- 10° each time)
2b. B is the odd one out. A will be 8.5cm, B will be 7.5cm and C will be 8.5cm.
3b. B

Expected

- 4b. Angle drawn: 97° as the sequence is $103^\circ, 100^\circ, 97^\circ, 94^\circ, 91^\circ, 88^\circ$ (- 3° each time)
5b. A is the odd one out. A will be 4.6cm, B will be 6.4cm and C will be 6.4cm.
6b. B

Greater Depth

- 7b. Angle drawn: 97° as the sequence is $108^\circ, 97^\circ, 86^\circ, 75^\circ, 64^\circ, 53^\circ$ (- 11° each time)
8b. C is the odd one out. A will be 8.9cm, B will be 8.9cm and C will be 8.3cm.
9b. A