

# Maths Spring 1

## Year 8

### Blended Learning Booklet

Name:

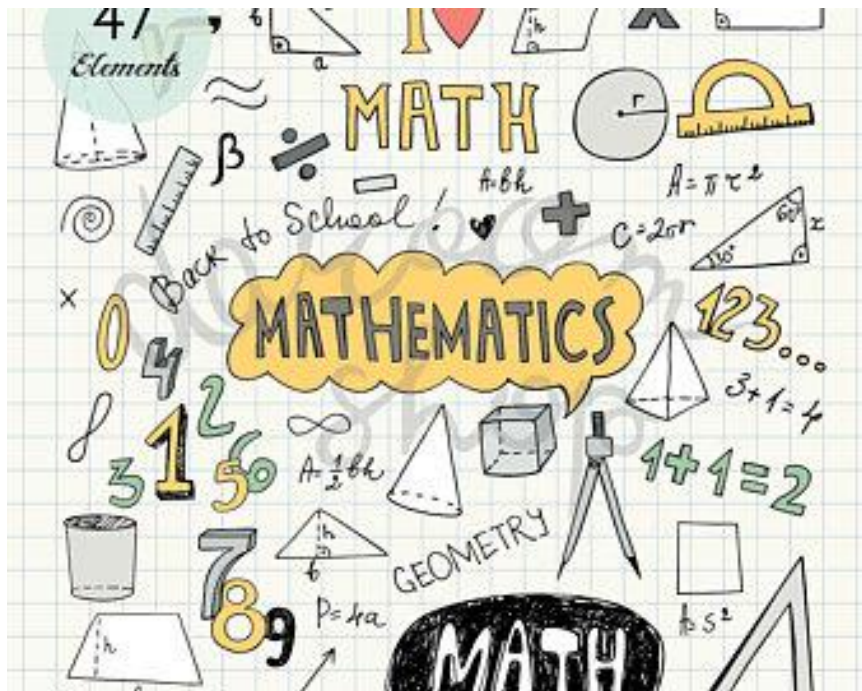
Form:

*Each week covers topics you would complete in your 3 Maths lessons that week. Write out the title and LI and then complete the tasks.*

*All video links are online using the ClassCharts link.*

*The Knowledge Organiser on page 4 has further practice questions and page numbers linking to your pocket revision guides for all the key information and examples to help you with this unit.*

*Upload all work onto ClassCharts for feedback.*



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Page 21-26: Week 4 – Constructions

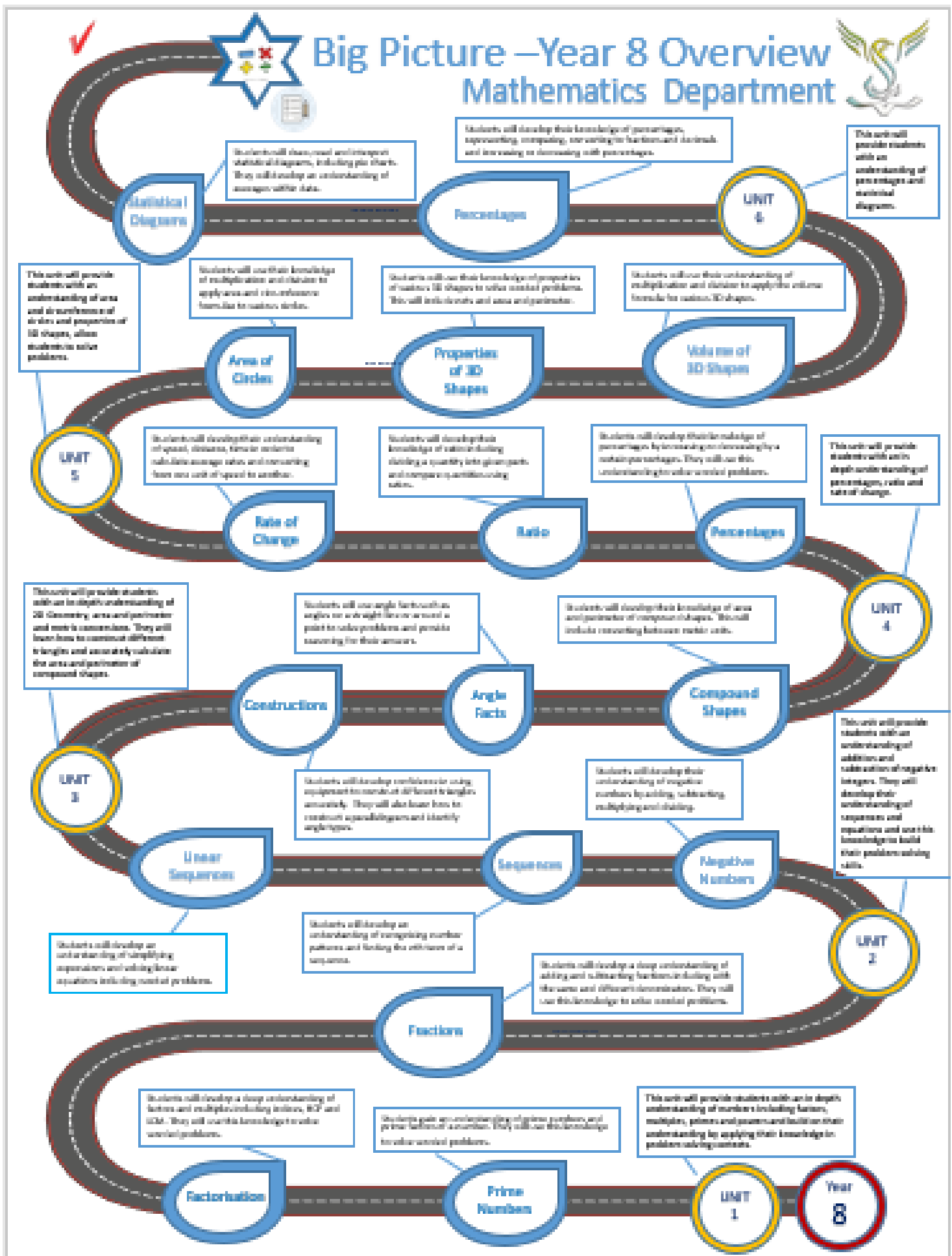
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## Big Picture –Year 8 Overview Mathematics Department





## Year 8 Unit 3

### 2D Geometry

Revision guide reference pages

Pages 56-57, 68-69, 71 and 79-80



1 Construct the following SSS triangles:

- 10cm, 4cm and 8cm
- 11cm, 9cm and 4cm
- 3cm, 7cm and 5cm

Construct the following SAS triangles:

- 4cm,  $120^\circ$  and 6cm
- 9cm,  $10\text{cm}$  and  $30^\circ$
- 8cm, 8cm and  $37^\circ$

Construct the following ASA triangles:

- 6cm,  $20^\circ$  and  $140^\circ$
- 6cm,  $40^\circ$  and  $50^\circ$
- 9cm,  $60^\circ$  and  $60^\circ$

9

$$-42 \div 6 =$$

$$-22 \div 2 =$$

$$99 \div -11 =$$

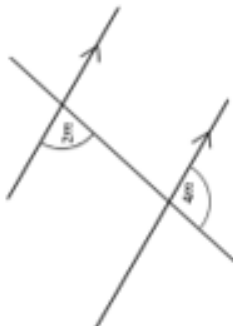
$$4 \times 6 =$$

$$-3 \times 4 =$$

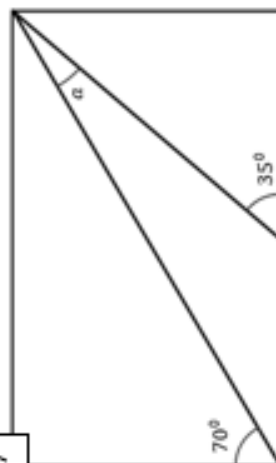


Work out the size of angle  $a$

4 Work out the value of  $m$ .



7



8

Put the correct symbol, either  $=$ ,  $<$  or  $>$ , in each circle:

$$70\text{ cm}^2$$

$$13\text{ m}^2$$

$$1500\text{ cm}^2$$



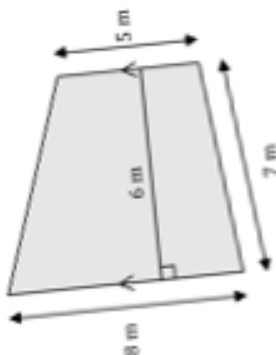
2

Construct a Rhombus with side lengths:

- a) 4cm
- b) 8cm
- c) 12cm

5

Calculate the area of this trapezium. Give your answer in  $\text{m}^2$  and  $\text{cm}^2$ .



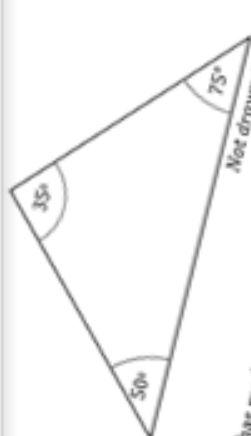
8

$$0.70\text{ m}^2$$

$$13\ 000\text{ cm}^2$$

$$1.5\text{ m}^2$$

3



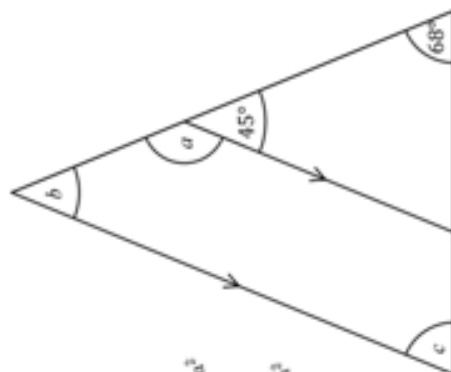
How can you tell that Joan has made a mistake? Give a reason for your answer.

6



Calculate the size of the angle marked  $m$ . Give a reason for your answer.

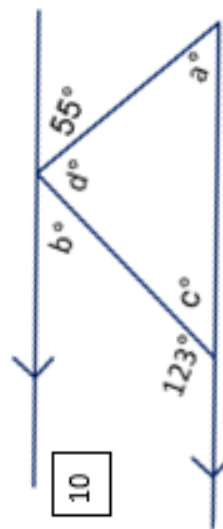
11



Work out the sizes of the angles marked with letters.

Give reasons for your answers

10



## Week 1:

- **L1:** To apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles

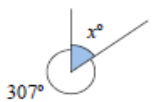
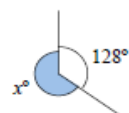


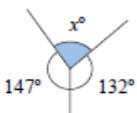
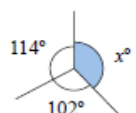
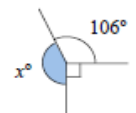
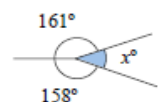
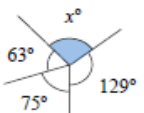
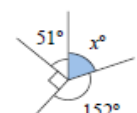
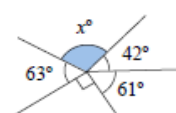
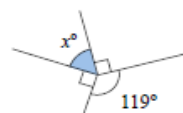
### Demonstration Videos:

<https://corbettmaths.com/2012/08/10/angles-in-a-full-circle/>


<https://corbettmaths.com/2013/12/19/angles-straight-line-video-35/>

<https://corbettmaths.com/2013/03/16/vertically-opposite-angles/>





### Tasks:

<b>ANGLE</b> <b>ANGLES AROUND A POINT</b>			
NO PROTRACTOR			
Ref: G421. <b>2F1</b>			
<b>A1</b> Find the value $x$ 	<b>A2</b> Find the value $x$ 	<b>A3</b> Find the value $x$ 	<b>A4</b> Find the value $x$ 
<b>B1</b> Find the value $x$ 	<b>B2</b> Find the value $x$ 	<b>B3</b> Find the value $x$ 	<b>B4</b> Find the value $x$ 
<b>C1</b> Find the value of $x$ 	<b>C2</b> Find the value of $x$ 	<b>C3</b> Find the value of $x$ 	<b>C4</b> Find the value of $x$ 


## Angles (1)




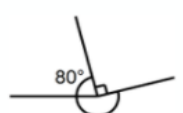
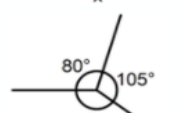
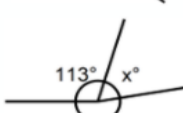
Find  $x$

- 
- 
- 
- 


**ANSWERS**





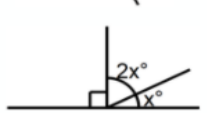

Find  $x$

- 
- 
- 
- 

**ANSWERS**



Find  $x$

- 
- 
- 
- 

**ANSWERS**

Name \_\_\_\_\_

Adding to 360°

64°	195°	150°	295°	251°
194°	241°	27°	132°	74°
81°	124°	41°	137°	214°
143°	77°	140°	48°	325°
129°	319°	31°	228°	32°

$223^\circ + ? = 360^\circ$

$35^\circ + ? = 360^\circ$

$279^\circ + ? = 360^\circ$

$41^\circ + ? = 360^\circ$

$217^\circ + ? = 360^\circ$

$283^\circ + ? = 360^\circ$

$65^\circ + ? = 360^\circ$

$312^\circ + ? = 360^\circ$

$166^\circ + ? = 360^\circ$

$228^\circ + ? = 360^\circ$

$210^\circ + ? = 360^\circ$

$296^\circ + ? = 360^\circ$

$231^\circ + ? = 360^\circ$

$165^\circ + ? = 360^\circ$

$328^\circ + ? = 360^\circ$

$329^\circ + ? = 360^\circ$

$333^\circ + ? = 360^\circ$

$132^\circ + ? = 360^\circ$

$146^\circ + ? = 360^\circ$

$109^\circ + ? = 360^\circ$





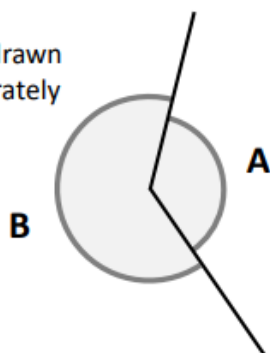

TOTAL



## DIGIT Puzzle

How many ways can you complete these two angles?

Not drawn accurately



Angle A =

Angle B =


Use any digits

Use digits only once

What are the largest & smallest angles you can make?

## ANGLE

ANGLES WHICH FORM A STRAIGHT LINE

NO PROTRACTOR

Ref: G421.

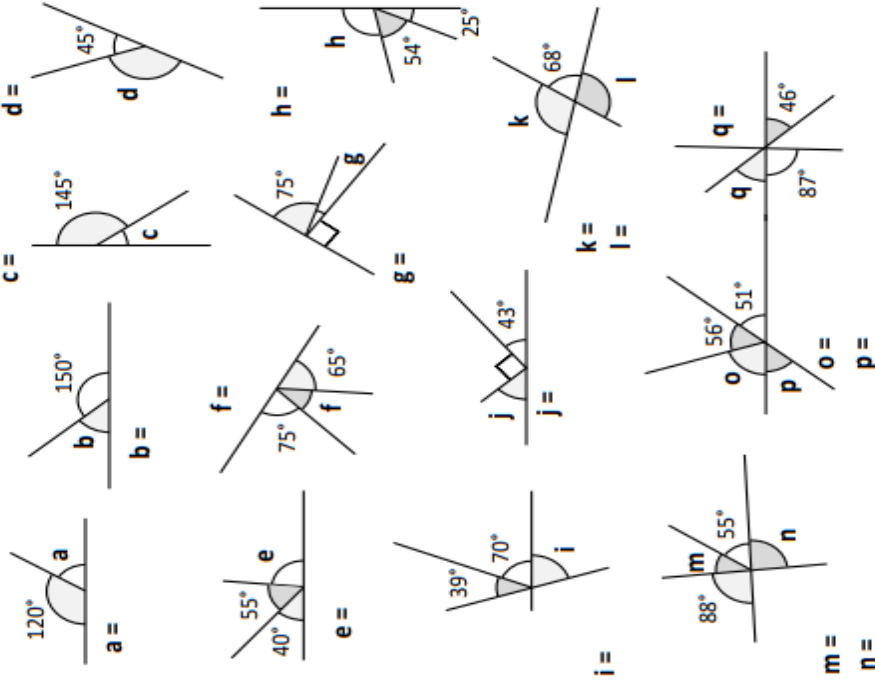
1F1

<b>A1</b> Find the value $x$ 	<b>A2</b> Find the value $x$ 	<b>A3</b> Find the value $x$ 	<b>A4</b> Find the value $x$ 
<b>B1</b> Find the value $x$ 	<b>B2</b> Find the value $x$ 	<b>B3</b> Find the value $x$ 	<b>B4</b> Find the value $x$ 
<b>C1</b> Find the value $x$ 	<b>C2</b> Find the value $x$ 	<b>C3</b> Find the values of $x$ and $y$ 	<b>C4</b> Find the values of $x$ and $y$ 



## Angles on Straight Lines

"Angles on a straight line total 180°"  
Calculate the missing angles. All the answers are at the bottom.



112°	47°	101°	40°	41°	112°	15°	155°	49°	60°	73°
62°	30°	35°	71°	37°	88°	51°	46°	85°	135°	77°

From the answers you have **not used**...  
which **three angles** can you put together to form a straight line?

Name

165°	25°	160°	125°	80°
150°	40°	90°	85°	100°
140°	70°	115°	55°	75°
35°	30°	95°	55°	110°
145°	45°	35°	20°	155°

65°, ?

110°, ?

100°, ?

40°, ?

15°, ?

35°, ?

80°, ?

25°, ?

105°, ?

140°, ?

95°, ?

55°, ?

145°, ?

155°, ?

20°, ?

160°, ?

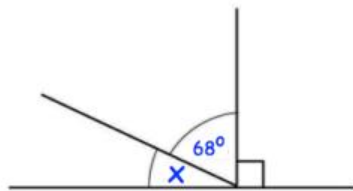
85°, ?

125°, ?

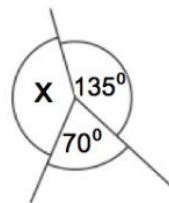
135°, ?

70°, ?

TOTAL

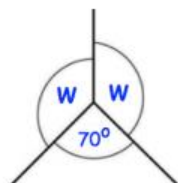


(a) Calculate angle x.



Not drawn accurately

(a) Work out the size of the angle marked x.



(b) Calculate angle w.

(b) Give a reason for your answer.

.....<sup>0</sup>

.....

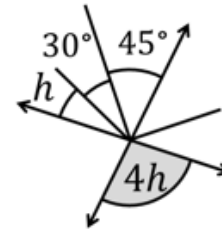
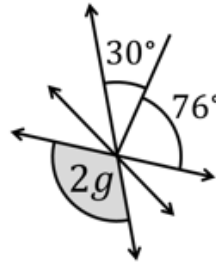
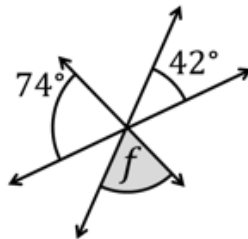
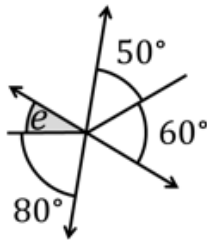
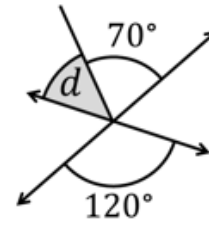
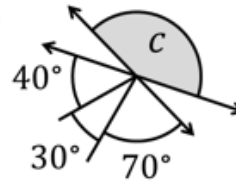
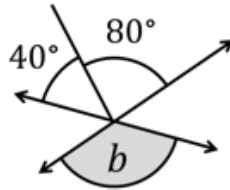
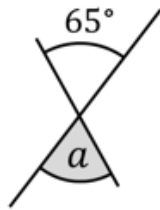
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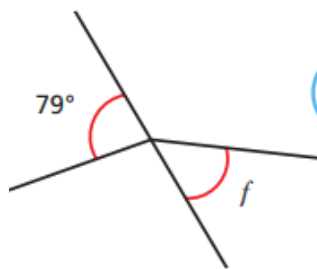


**ANGLE RULE:** Vertically opposite angles are equal.

Calculate the value of each angle.



Annie is working out the size of angle  $f$ .



Angle  $f$  is equal to  $79^\circ$  because vertically opposite angles are equal.



Do you agree with Annie? \_\_\_\_\_

Explain your answer.

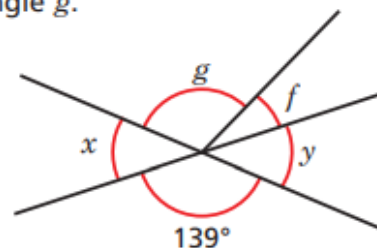
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Angle  $f$  is one quarter of the size of angle  $g$ .

Angle  $f$  is  $28^\circ$ .



Are angles  $x$  and  $y$  vertically opposite? \_\_\_\_\_

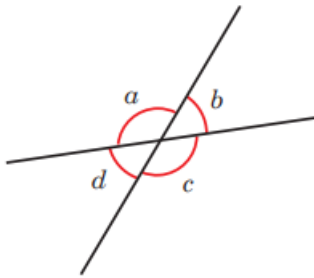
Explain your answer.

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The diagram shows four angles formed by two straight lines.



a) Measure the sizes of the angles.

$a =$    $b =$    $c =$    $d =$

b) What is the total of angles  $a$  and  $b$ ?

Explain why.

\_\_\_\_\_

Do any other pairs of angles have this same total?

c) Angles  $a$  and  $c$  are vertically opposite angles.

What do you notice about the sizes of angles  $a$  and  $c$ ?

\_\_\_\_\_

d) Angles  $b$  and  $d$  are also vertically opposite angles.

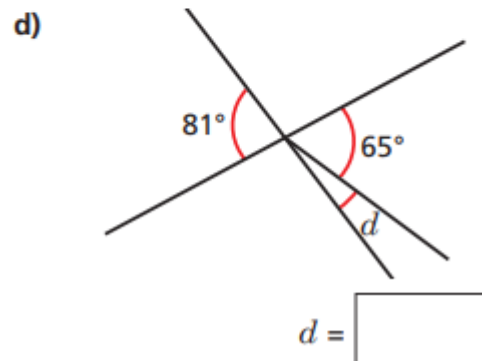
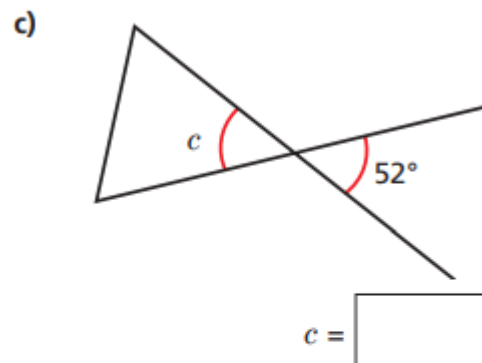
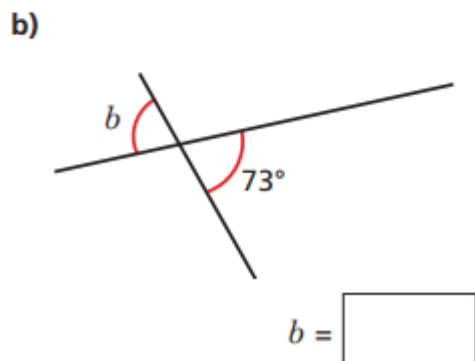
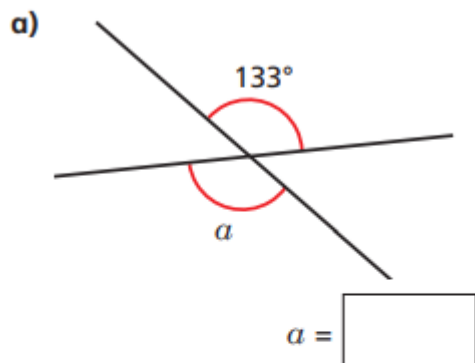
What do you notice about the sizes of angles  $b$  and  $d$ ?

\_\_\_\_\_

e) Complete the sentence.

Vertically opposite angles \_\_\_\_\_

Work out the unknown angles.





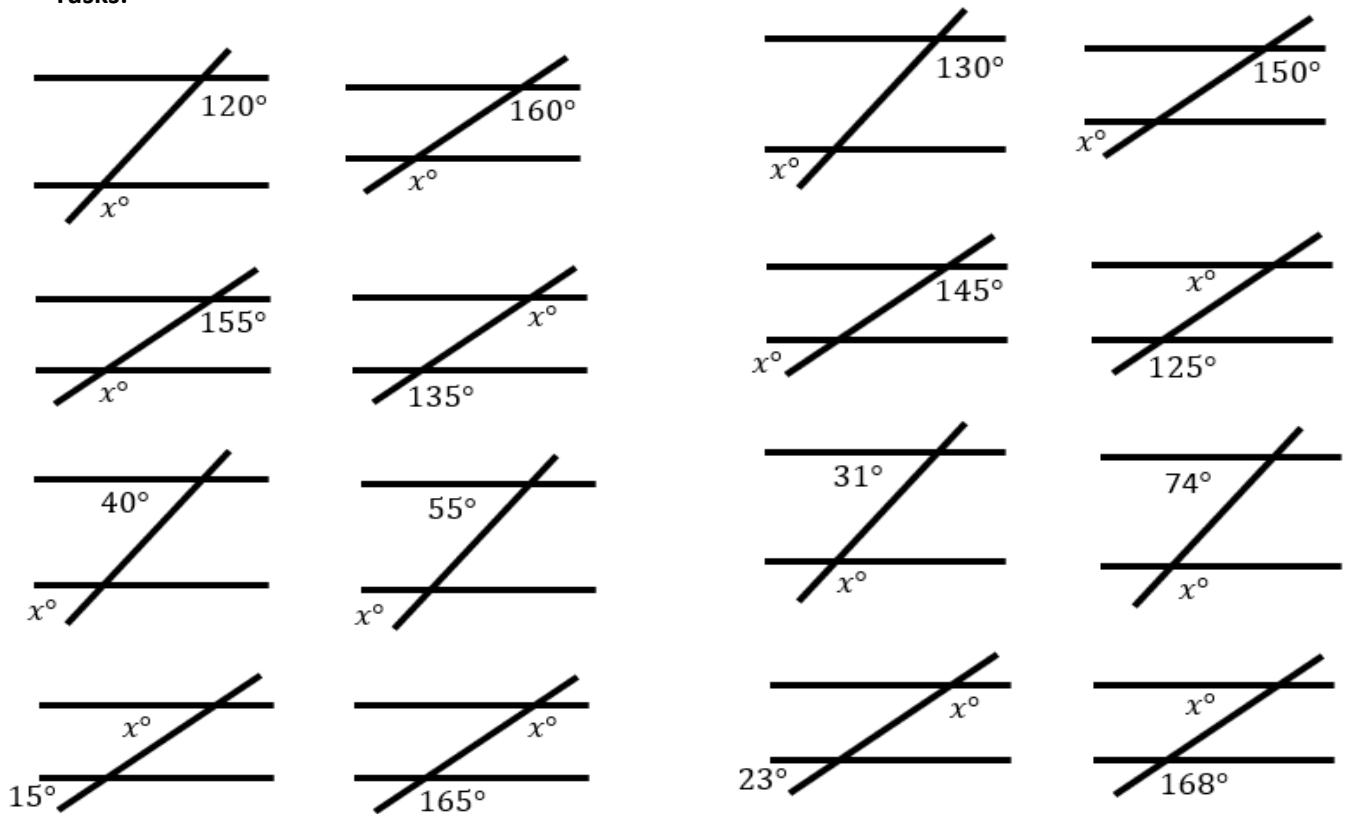
## Week 2:

- **L1:** To understand and use the relationship between parallel lines and alternate and corresponding angles

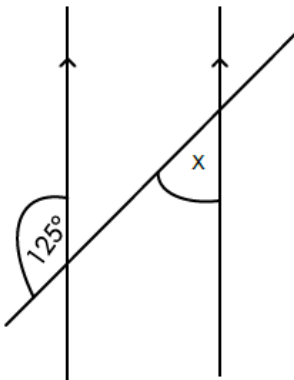
### Demonstration Videos:

<https://corbettmaths.com/2013/04/04/parallel-lines-angles/>

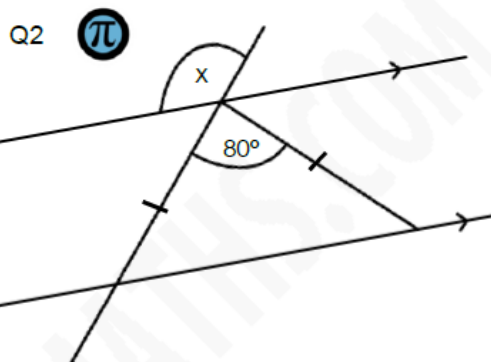
### Tasks:



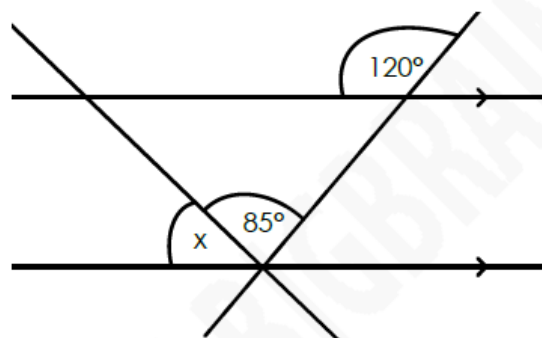
Q1



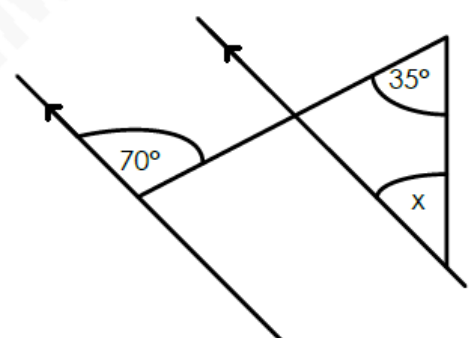
Q2

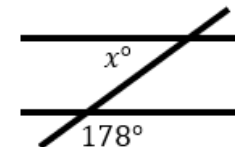
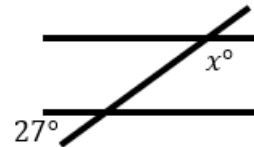
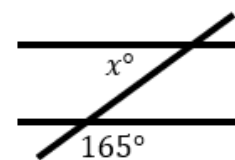
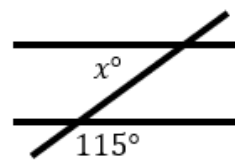
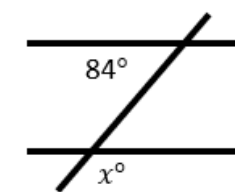
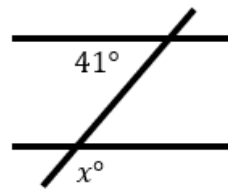
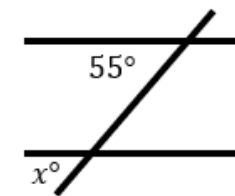
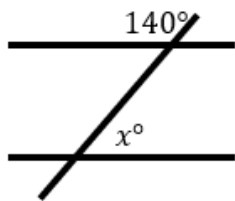
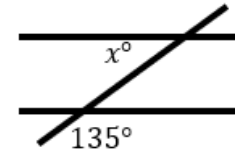
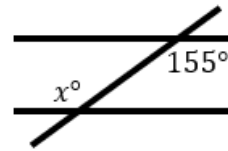
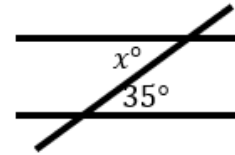
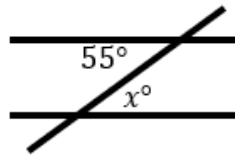
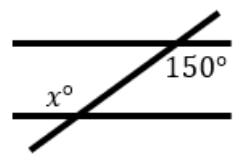
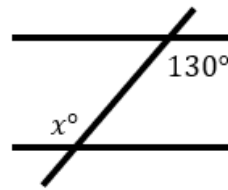
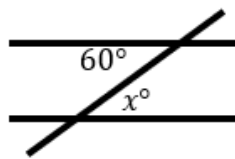
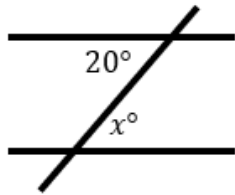


Q3

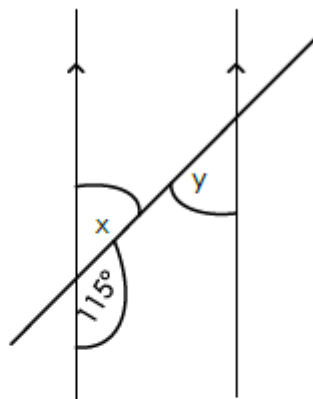


Q4

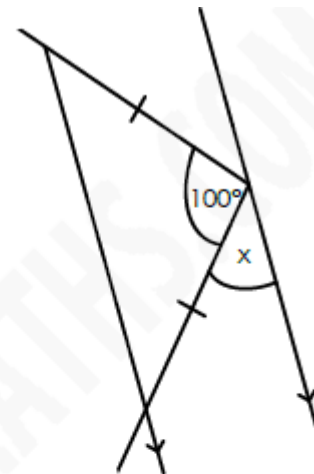




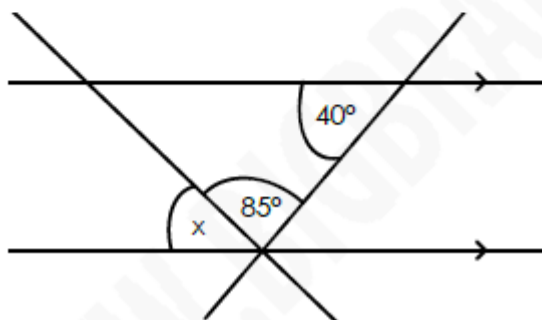
Q1



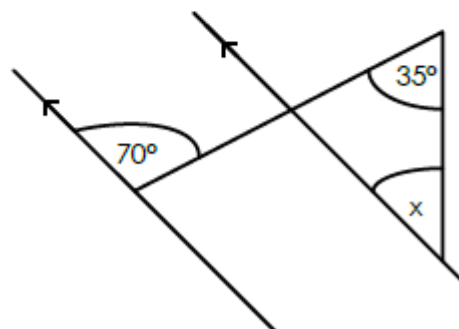
Q2



Q3



Q4



**Angles Around Parallel Lines:** Measure and label each angle.  
What relationships can you find between pairs of angles?

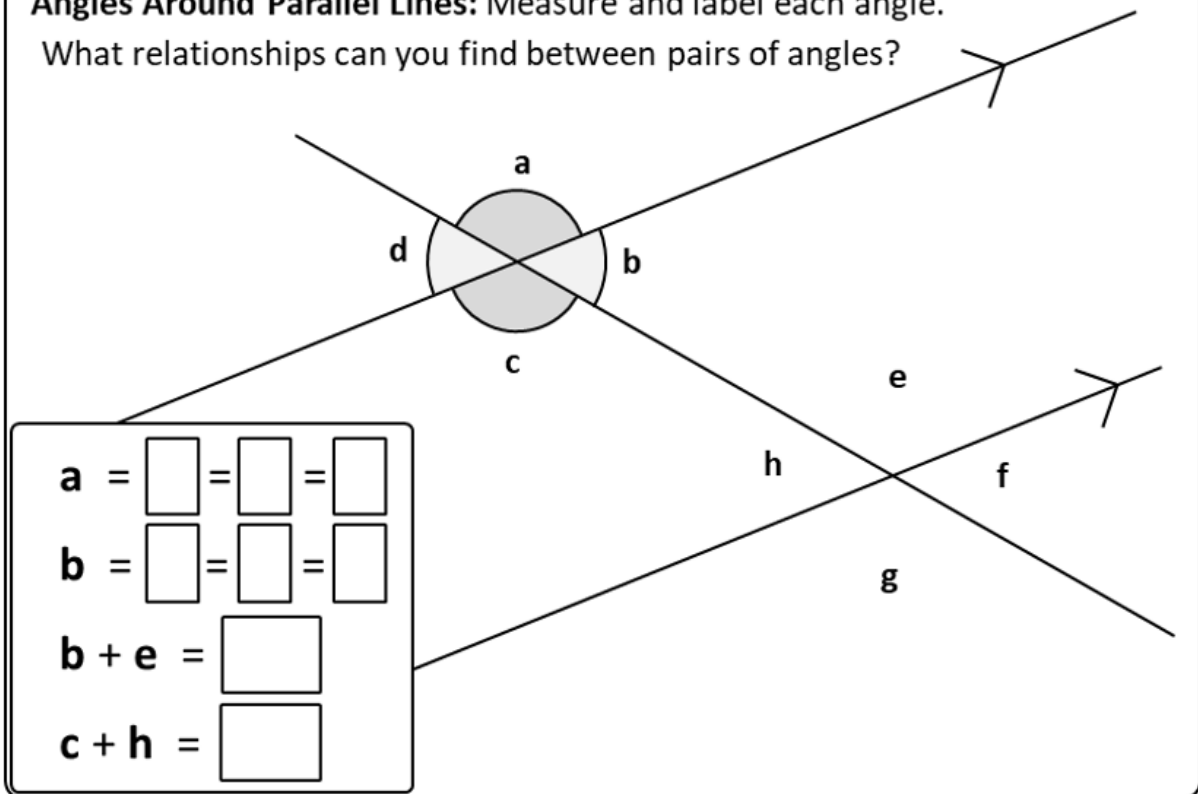


Diagram showing two parallel lines intersected by two transversals. The top intersection has angles labeled  $a$ ,  $b$ ,  $c$ , and  $d$ . The bottom intersection has angles labeled  $e$ ,  $f$ ,  $g$ , and  $h$ .

Box containing equations to be solved:

$$a = \square = \square = \square$$

$$b = \square = \square = \square$$

$$b + e = \square$$

$$c + h = \square$$

**Parallel Lines**  
By measuring corresponding angles,  
Find – and label – pairs of parallel lines.

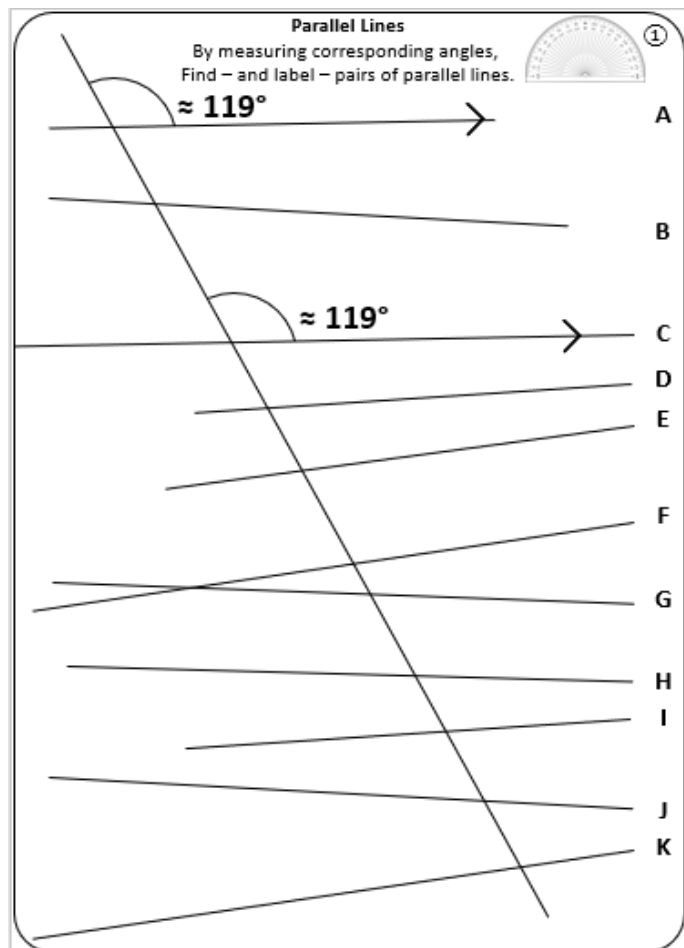
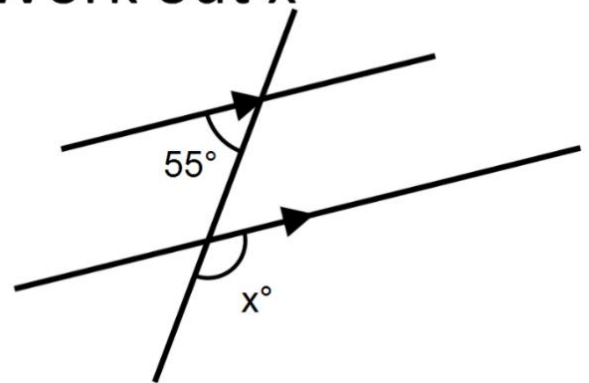
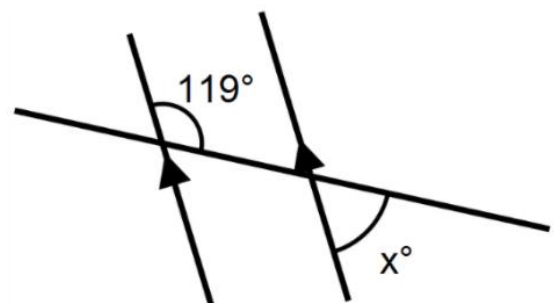


Diagram showing 11 horizontal lines labeled A through K, intersected by a transversal. Two angles are marked as  $\approx 119^\circ$ . A protractor icon is shown in the top right corner.

Work out  $x$

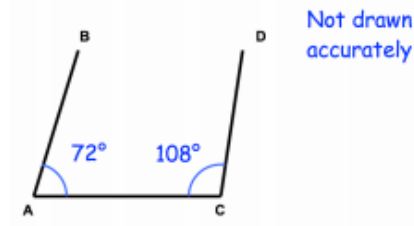


Work out  $x$

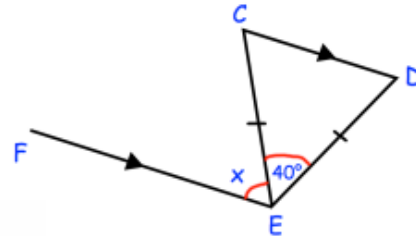




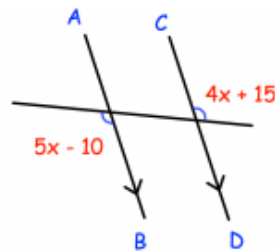
Question 1: Are the lines AB and CD parallel? Explain your answer.



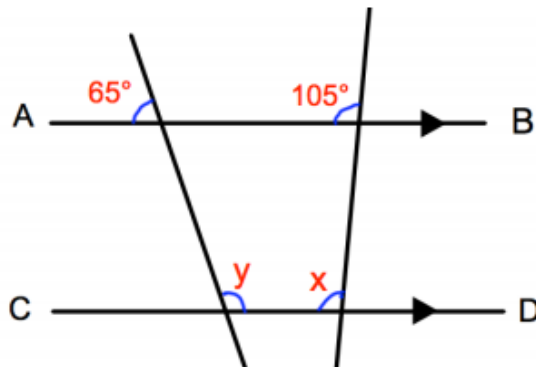
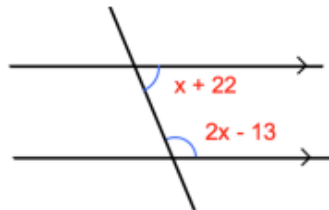
Question 2: Find the missing angle.  
Give reasons for your answer.



Question 3: Find x



Question 4: Find x



AB is parallel to CD.

(a) Work out the size of the angle marked x.

.....°

Give a reason for your answer.

.....

.....

(2)

(b) Work out the size of the angle marked y.

.....°

(2)



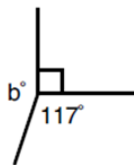
1		2			3		4	
		5	6				7	8
9	10		11					
	12	13				14		
15				16				
17	18		19			20	21	
	22			23	24		25	26
27					28			

## Across

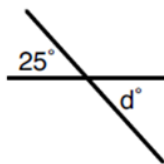
- 1.
- 3.
- 5.
- 7.
- 9.
- 11.
- 12.
- 14.
- 16.
- 17.
- 19.
- 20.
- 22.
- 23.
- 25.
- 27.
- 28.

## Down

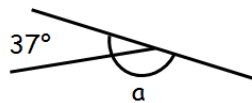
1.



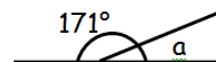
2.



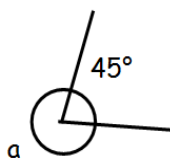
3.



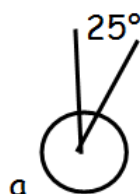
4.



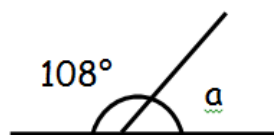
6.



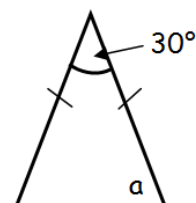
8.



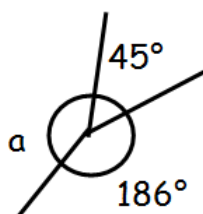
10.



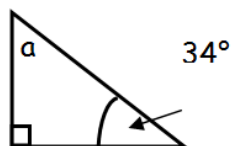
13.



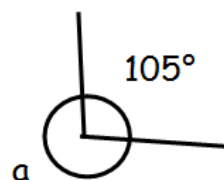
14.



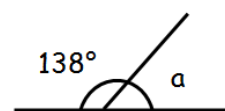
15.



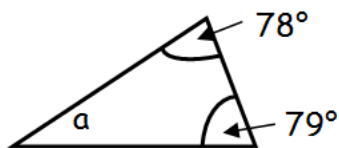
18.



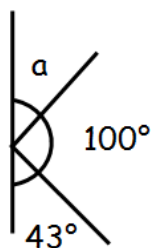
21.



24.



26.



★

Find x

1) 55°  $x^\circ$

2) 56°  $x^\circ$

3)  $x^\circ$  133°

4)  $x^\circ$  86°

★ ★

Find x

1)  $x^\circ$  150°

2) 155°  $x^\circ$

3) 45°  $x^\circ$

4) 105°  $x^\circ$

★ ★ ★

Find x

1)  $x^\circ$   $3x^\circ$

2)  $2x^\circ$   $x^\circ$

3)  $x^\circ$   $5x^\circ$

4)  $x^\circ$   $4x^\circ$



## Week 3:

- L1:** To derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons

### Demonstration Videos:

<https://corbettmaths.com/2013/03/17/angles-in-quadrilaterals/>

<https://corbettmaths.com/2012/08/10/angles-in-a-triangle/>

<https://corbettmaths.com/2012/08/10/types-of-angle/>

### Tasks:

Name \_\_\_\_\_

Two angles in a triangle are given. Find the missing angle

35°	80°	110°	40°	75°
20°	140°	50°	65°	5°
35°	125°	45°	100°	105°
10°	130°	155°	145°	50°
20°	55°	60°	115°	50°

25°, 30°, ?

50°, 15°, ?

90°, 85°, ?

75°, 65°, ?

25°, 25°, ?

95°, 75°, ?

25°, 45°, ?

45°, 55°, ?

15°, 10°, ?

75°, 55°, ?

80°, 45°, ?

75°, 85°, ?

65°, 15°, ?

50°, 65°, ?

90°, 45°, ?

25°, 10°, ?

35°, 95°, ?

70°, 35°, ?

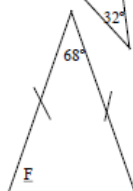
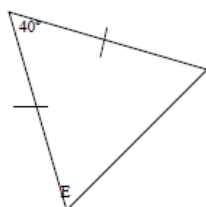
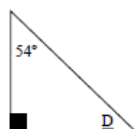
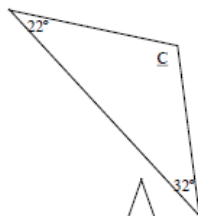
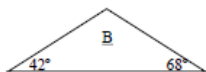
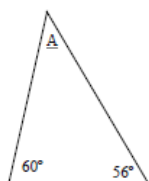
30°, 45°, ?

60°, 60°, ?

TOTAL

Find the missing angles in these Triangles.

### Skill 1



Create a definition for each of these types of triangles:

Isosceles

Right-Angled

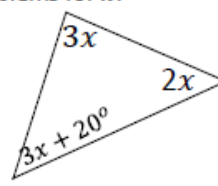
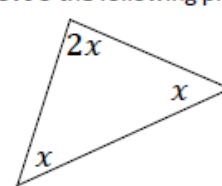
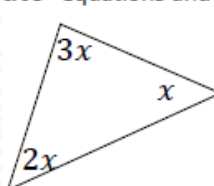
Equilateral

Scalene

Literacy

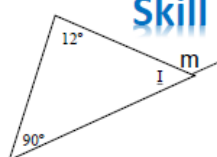
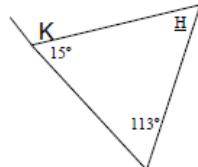
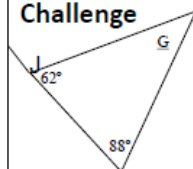
Create equations and Solve the following problems for x.

Stretch 1



### Challenge

### Skill 2



Name \_\_\_\_\_

Two angles in a triangle are given. Find the missing angle

59°	13°	75°	26°	121°
11°	22°	24°	96°	67°
23°	17°	53°	60°	24°
80°	122°	33°	30°	54°
34°	103°	34°	35°	80°

129°, 17°, ?

42°, 58°, ?

36°, 111°, ?

91°, 66°, ?

26°, 94°, ?

132°, 18°, ?

142°, 14°, ?

106°, 63°, ?

46°, 59°, ?

24°, 53°, ?

64°, 57°, ?

115°, 43°, ?

112°, 14°, ?

50°, 34°, ?

37°, 63°, ?

78°, 35°, ?

16°, 42°, ?

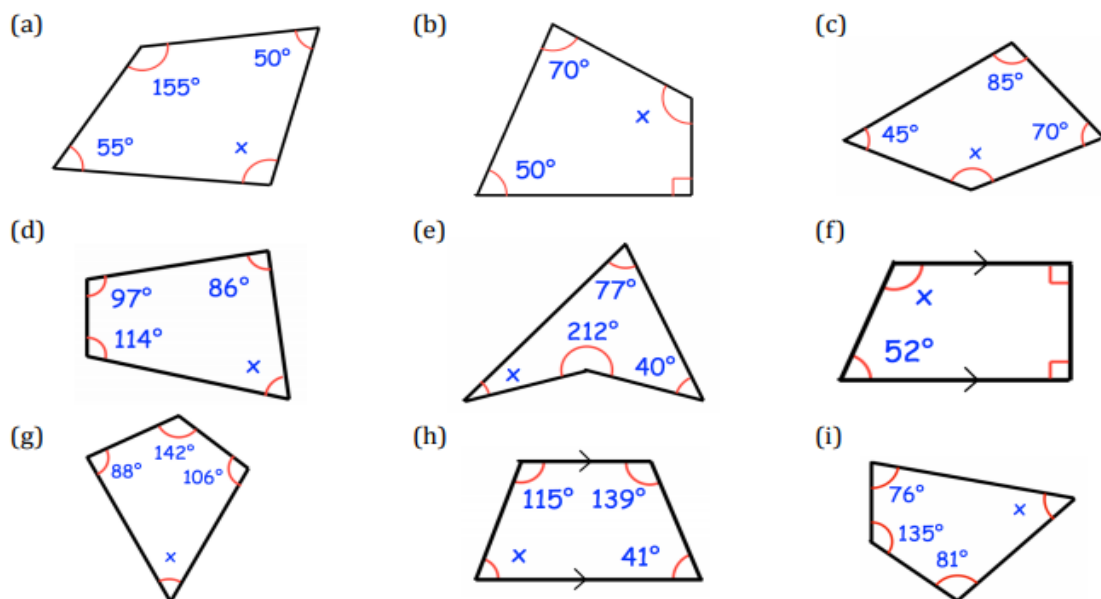
129°, 34°, ?

103°, 42°, ?

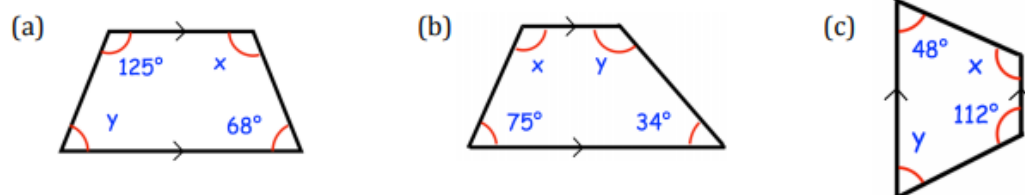
26°, 33°, ?

TOTAL

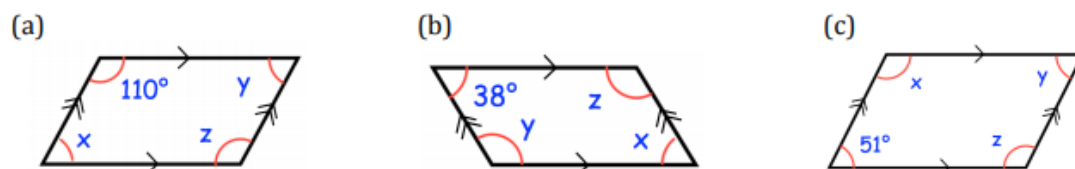
Question 1: Find the size of each missing angle.



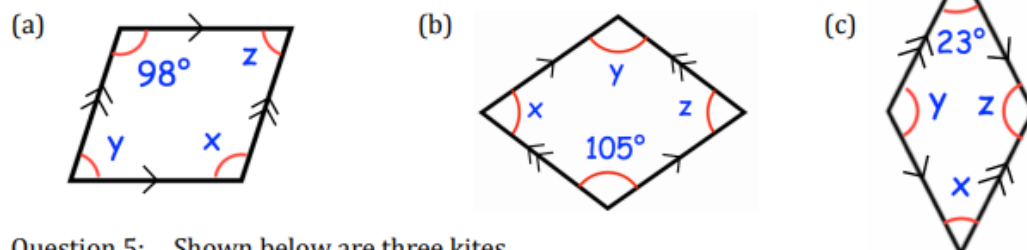
Question 2: Shown below are three trapezia.  
Find the size of each missing angle.



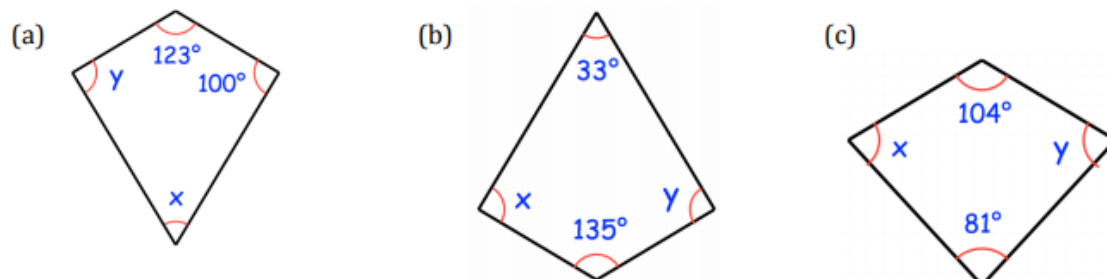
Question 3: Shown below are three parallelograms.  
Find the size of each missing angle.

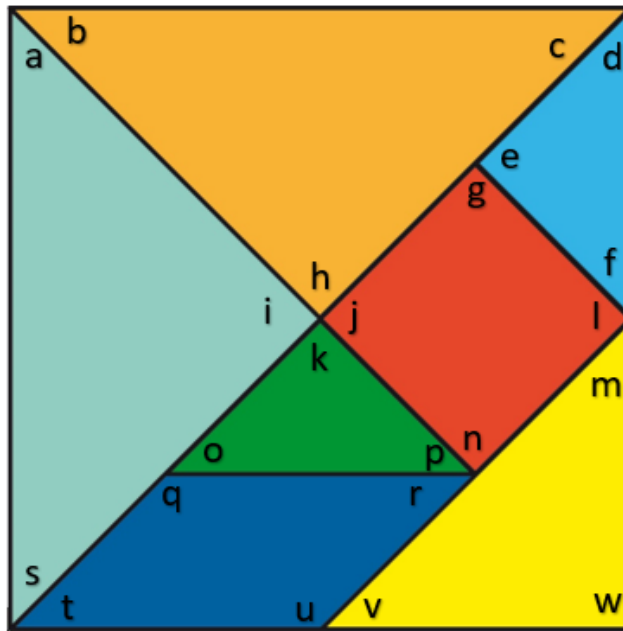


Question 4: Shown below are three rhombuses.  
Find the size of each missing angle.



Question 5: Shown below are three kites.  
Find the size of each missing angle.





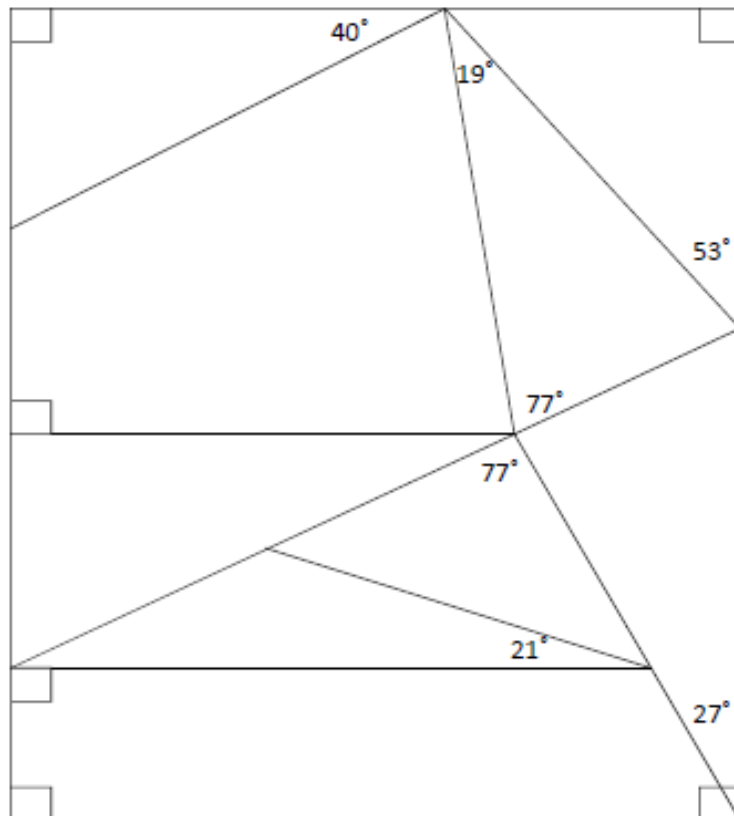
This is a Tangram Puzzle, Can you work out all of the angles made in the puzzle without measuring them?

a =	h =	o =
b =	i =	p =
c =	j =	q =
d =	k =	r =
e =	l =	s =
f =	m =	t =
g =	n =	u =

v =                  w =

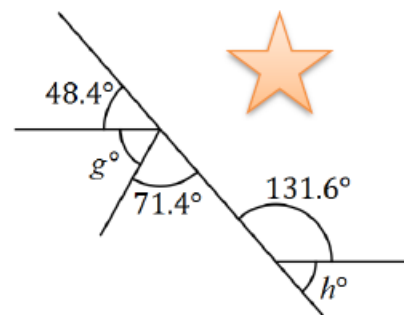
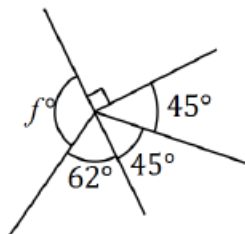
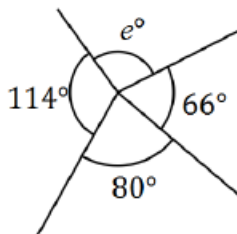
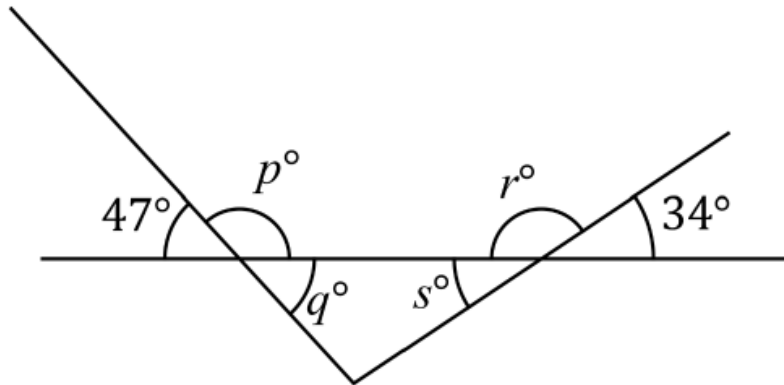
### Missing Angles

Calculate the missing angles in the below picture using just the information provided.



Find the size of each angle marked with a letter and give reasons for your answers.

Diagrams not drawn accurately



Size of angle e: ..... Reason: .....

Size of angle f: ..... Reason: .....

Size of angle g: ..... Reason: .....

Size of angle h: ..... Reason: .....

The image shows three straight lines that intersect at a point. Tick **true** or **false** for each of the statements below.

	True	False
Angle <b>f</b> is vertically opposite angle <b>d</b>		
$d + b + c = 180^\circ$		
$a + f = 180^\circ$		
$c + b = f + e$		

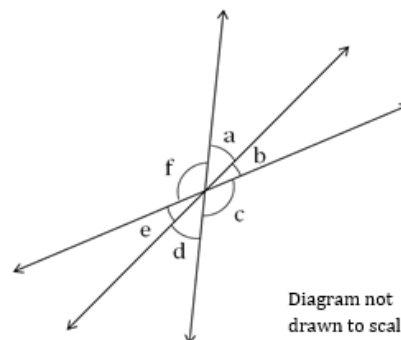
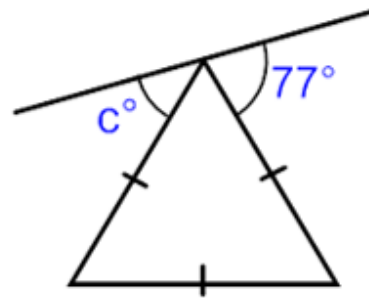
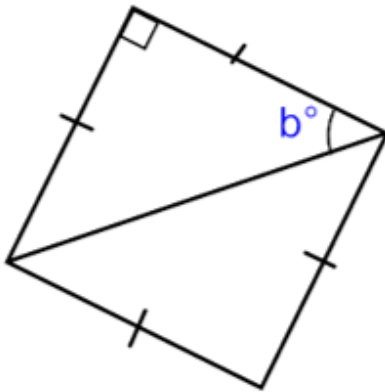
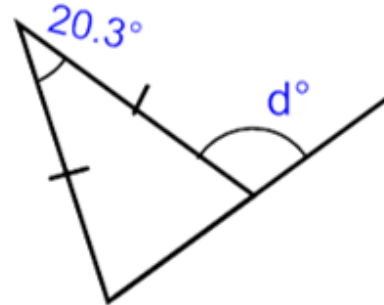
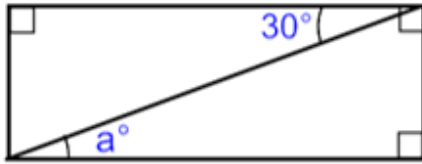


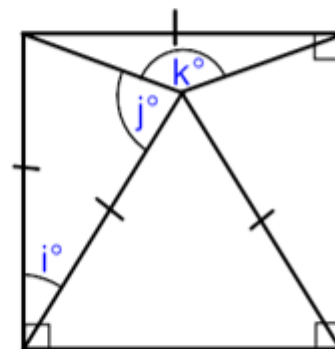
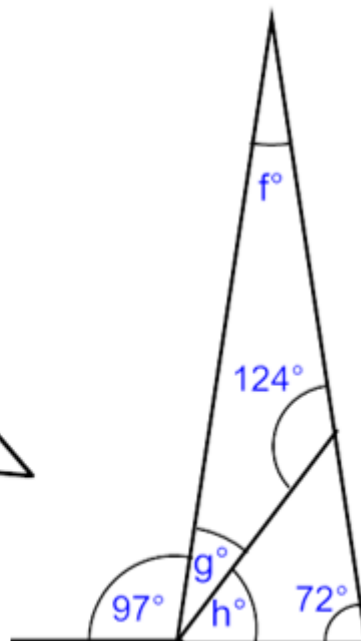
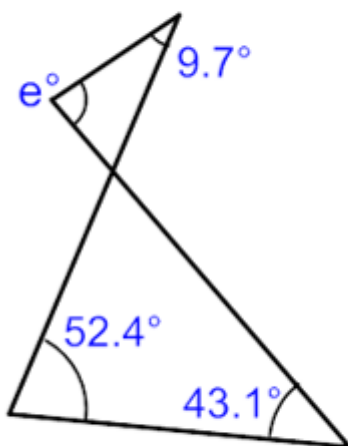
Diagram not drawn to scale



Find the missing angles



Find the missing angles



## Week 4:

- **LI:** To derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures using appropriate language and technologies

### Demonstration Videos:

<https://corbettmaths.com/2013/03/28/constructing-sas-triangles/>

<https://corbettmaths.com/2013/03/29/constructing-asa-triangles/>

<https://corbettmaths.com/2013/03/26/constructing-sss-triangles/>

<https://corbettmaths.com/2013/03/26/angle-bisector/>

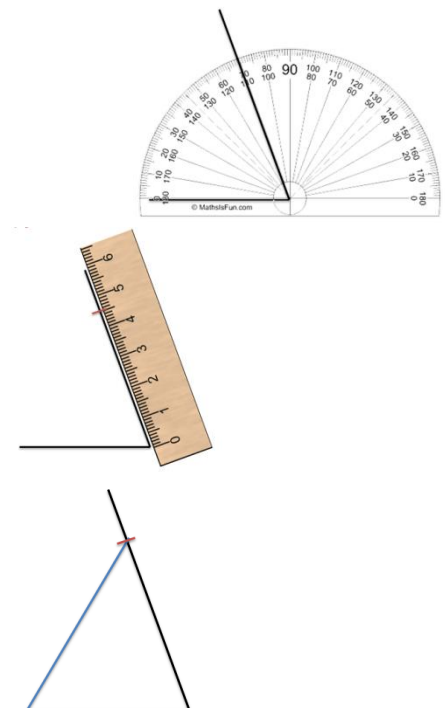
### Tasks:

#### Side Angle Side triangles (there is an angle between two sides)

1. Using a ruler, draw out a line that is the length of one of the sides
2. Measure the given angle from the end of the line you have just drawn and draw a long line to mark your angle

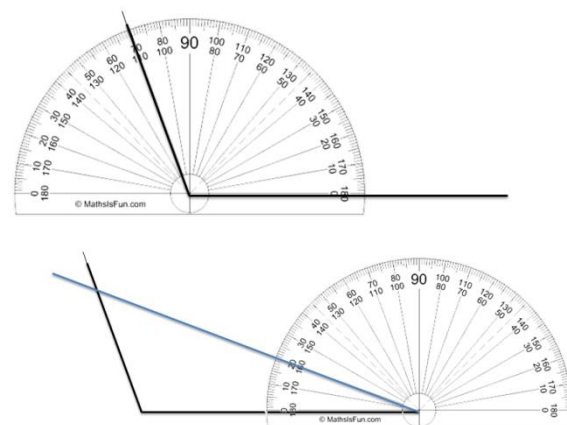
3. Using a ruler, measure along the line for the given length

4. Connect the other end of the first line to finish off your triangle. Then **label all of the sides and angles** you have just measured/drawn.



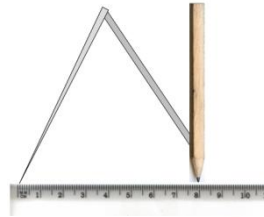
#### Angle Side Angle Triangles (two angles with a side between them)

1. Draw a line with the given length
2. Measure one of the angles from one end of the line. The line going through the angle should be quite long
3. Measure the other angle from the other end of the line. The line through that angle will meet the line through the other angle. Then **label all of the sides and angles** you have just measured/drawn.

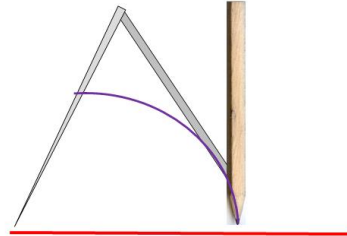


## Side Side Side triangles (triangles with all three sides but no angles)

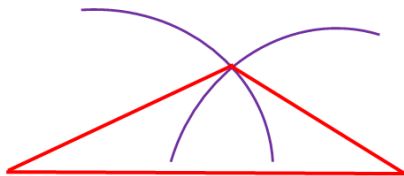
1. Draw one of the lengths with a ruler
2. Set your compasses to the other length



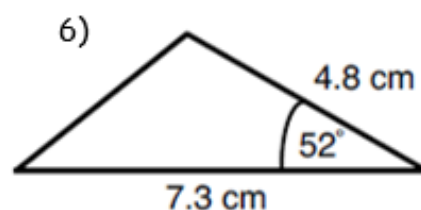
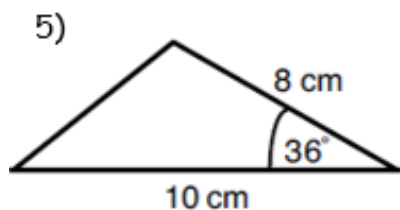
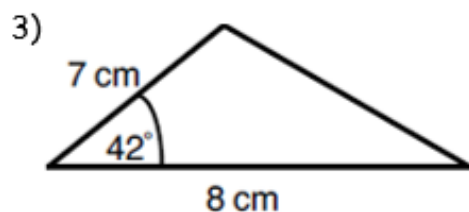
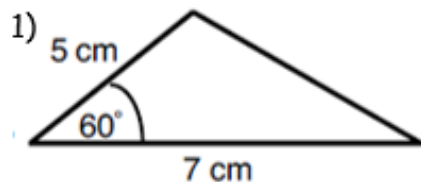
3. Draw an arc from the end of your line using your compass



4. Repeat steps 2 and 3 for the other length and then draw lines from the ends of the line you measured to where the arcs cross. Then label all of the sides you have just measured/drawn.



Construct (draw) accurate triangles given the length of two sides and the angle between them - **Side-Angle-Side**.

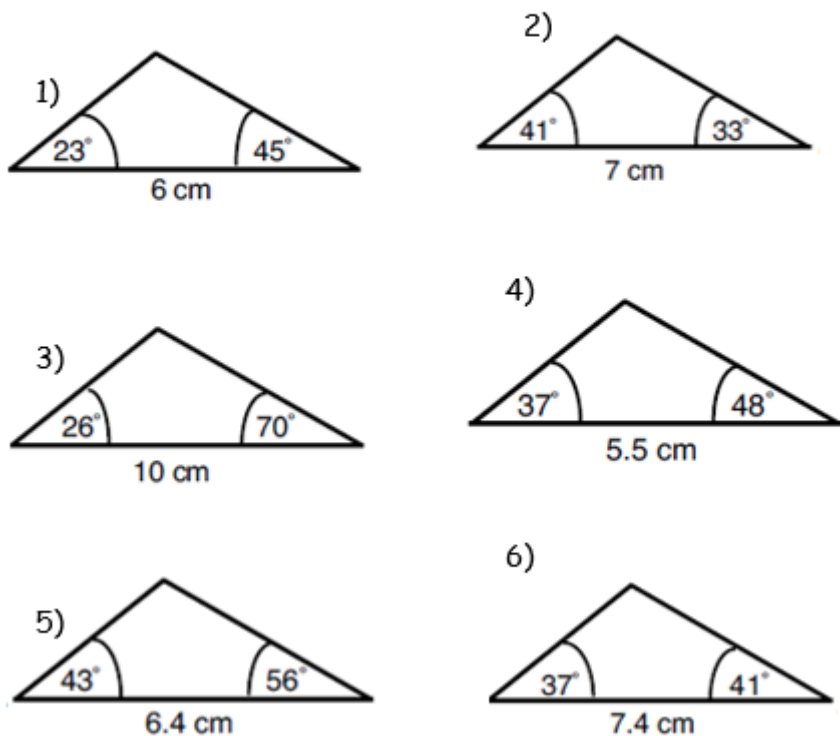




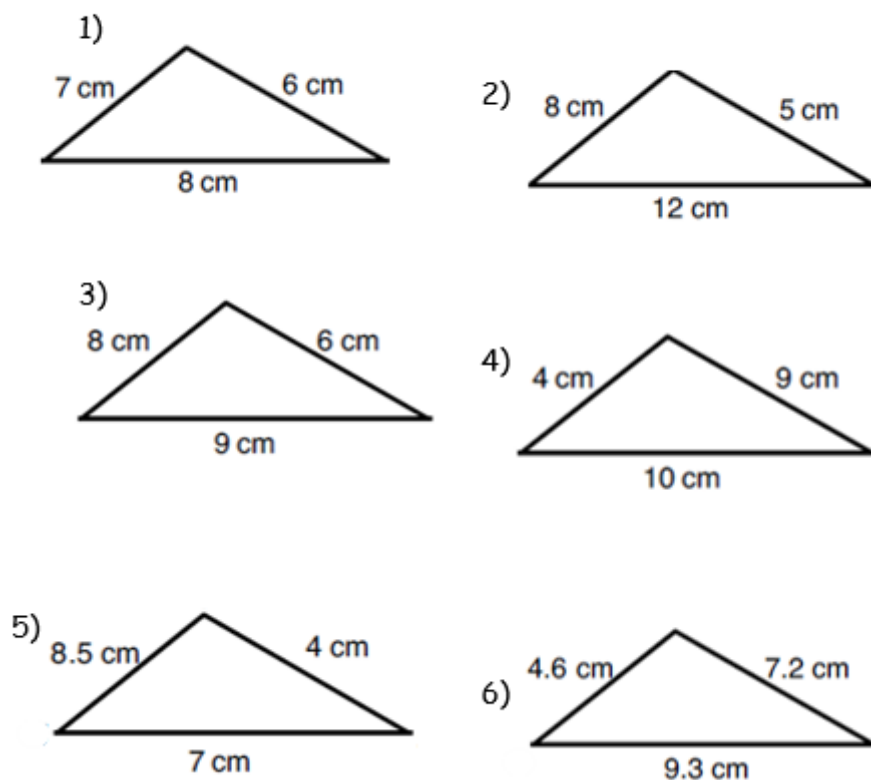


# Stewards Academy

Construct (draw) accurate triangles given the length of one side and the angles at each end of it - **Angle-Side-Angle**.



Construct (draw) accurate triangles given the lengths of all three sides - **Side-Side-Side**.





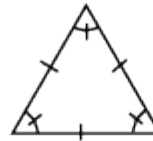
Construct these triangles using a ruler, compasses and protractor:

## Section A (SSS Triangles)

1.  $\triangle ABC$ : Length  $AB=10\text{cm}$ ,  
Length  $AC=4\text{cm}$ ,  
Length  $BC=8\text{cm}$ .



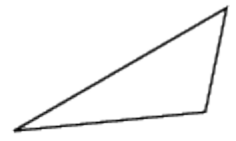
*acute  
scalene triangle*



*equilateral  
triangle*



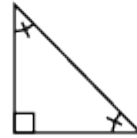
*isosceles  
triangle*



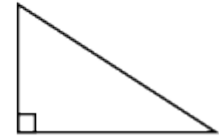
*obtuse  
scalene triangle*

2.  $\triangle ABC$ : Length  $AB=11\text{cm}$ ,  
Length  $AC=9\text{cm}$ ,  
Length  $BC=4\text{cm}$ .

Label angle A. What is the size of angle A?



*isosceles right  
triangle*



*right triangle*

3.  $\triangle PQR$ : Length  $PQ=3\text{cm}$ ,  
Length  $QR=7\text{cm}$ ,  
Length  $PR=5\text{cm}$ .

Label angle P. What type of angle is P?

## Section B (SAS Triangles)

4.  $\triangle PQR$ : Length  $PQ= 4\text{cm}$ ,  
Angle  $P= 120^\circ$ ,  
Length  $PR= 6\text{cm}$ .

Label length QR. What is length QR? Measured to one decimal place (1 d.p.)

5.  $\triangle XYZ$ : Length  $XY= 9\text{cm}$ ,  
Length  $XZ= 10\text{cm}$ ,  
Angle  $X= 30^\circ$ .

Label length YZ. What is length YZ?

6.  $\triangle ABC$ : Length  $AB= 8\text{cm}$ ,  
Length  $AC= 8\text{cm}$ ,  
Angle  $A = 37^\circ$ .

Label length BC. What is length BC?

Hence what type of triangle is  $\triangle ABC$ ?

## Section C (ASA Triangles)

7.  $\triangle ABC$ : Length  $AB=6\text{cm}$ ,  
 Angle  $A = 20^\circ$ ,  
 Angle  $B = 140^\circ$ .

What is the size of angle  $C$ ?

What type of triangle is  $ABC$ ? Therefore, can you find out the length of  $BC$  without measuring it?

8.  $\triangle XYZ$ : Length  $XY= 6\text{cm}$ ,  
 Angle  $Y = 40^\circ$   
 Angle  $X = 50^\circ$

What is the size of angle  $Z$ ?

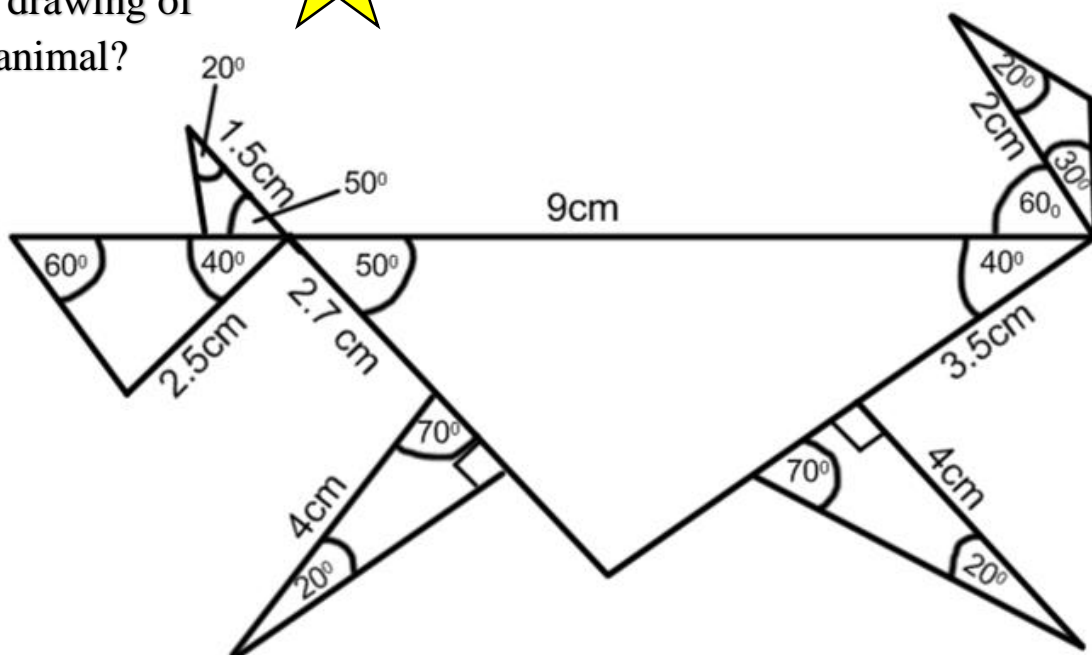
What type of triangle is  $XYZ$ ?

9.  $\triangle RST$ : Length  $RS = 9\text{cm}$   
 Angle  $S = 60^\circ$   
 Angle  $R = 60^\circ$

What is the size of angle  $T$ ?

What type of triangle is  $\triangle RST$ ? Therefore how long are the other sides of the triangle without measuring them?

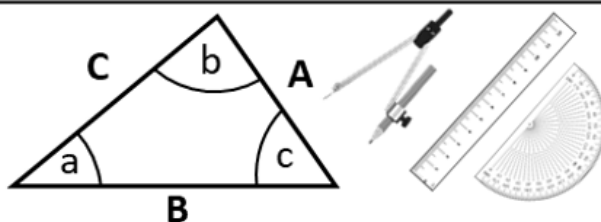
Can you construct an accurate drawing of this animal?



Not drawn to scale

## Constructing Triangles

Use a compass, a protractor and a ruler to construct each triangle, and complete the **Angle b** column.



To start, draw the horizontal base (B) for each triangle. Lengths are in cm.

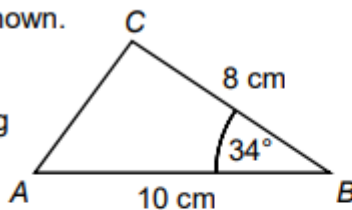
Triangle	Side A	Angle a	Side B	Angle b	Side C	Angle c
1	×	40°	10		×	70°
2	×	35°	9		8	×
3	8	×	7		6	×
4	×	25°	11		×	55°
5	7	×	8.5		9.5	×
6	6.5	×	7.5		×	85°
7	5	30°	9.5		×	×
8	×	×	6.2		4.5	22°

What is different about triangles 7 & 8?

## GCSE — AQA Foundation: June 2018 Paper 3, Q16

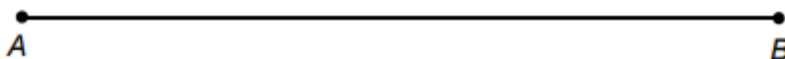
- 1 A sketch of triangle ABC is shown.

In the space below, complete an accurate drawing of triangle ABC.



Not drawn accurately

[2 marks]



## Week 5:

- **L1:** to use standard units of mass, length, time, money and other measures, including with decimal quantities

### Demonstration Videos and Examples:

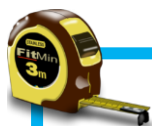
<https://corbettmaths.com/2013/12/13/converting-between-metric-units-for-area/>

<https://corbettmaths.com/2013/05/18/inequalities/>

<https://corbettmaths.com/2013/12/28/metric-and-imperial-units-video-347/>

### Tasks:

## Weight, Length and Capacity Place Mat

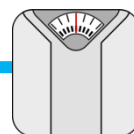


### Length

1 centimetre (cm) = 10 millimetres (mm)

1 metre (m) = 100 centimetres (cm)

1 kilometre (km) = 1000 metres (m)



### Weight

1 gram (g) = 1000 milligrams (mg)

0.1 kilograms (kg) = 100 grams (g)

1 kilogram (kg) = 1000 grams (g)

1 tonne = 1000 kilograms (kg)

### Capacity

1 litre (l) = 1000 millilitres (ml)

1 litre (l) = 100 centilitres (cl)

1 centilitre (cl) = 10 millilitres (ml)

0.1 litres (l) = 100 millilitres (ml)



### Imperial Units

1 pint = 568ml

1 inch = 2.5 cm or 25 mm

1 foot = 12 inches or 30 cm

1 mile = 1.6 km

1 ounce = 25g & 1 pound (lb) = 500g



Name \_\_\_\_\_

**Conversion : miles and km**

160 km	90 miles	80 miles	7.5 miles	64 km
12.5 miles	90 km	32 km	88 km	24 km
56 km	10 miles	96 km	20 miles	70 km
12.5 miles	100 miles	4 km	45 miles	15 miles
50 miles	112 km	2.5 miles	80 km	40 miles

20 km $\approx$ .....miles	2.5 miles $\approx$ ..... km	15 miles $\approx$ ..... km	80 km $\approx$ .....miles
16 km $\approx$ .....miles	32 km $\approx$ .....miles	35 miles $\approx$ ..... km	40 miles $\approx$ ..... km
72 km $\approx$ .....miles	160 km $\approx$ .....miles	12 km $\approx$ .....miles	20 km $\approx$ .....miles
60 miles $\approx$ ..... km	24 km $\approx$ .....miles	20 miles $\approx$ ..... km	4 km $\approx$ .....miles
100 miles $\approx$ ..... km	55 miles $\approx$ ..... km	64 km $\approx$ .....miles	70 miles $\approx$ ..... km






MISSING MEASURE

Name \_\_\_\_\_

**Change cm to mm and mm to cm**

54 mm	150 mm	7 cm	90 mm	52 mm
43 mm	40 mm	20 mm	73 mm	23 mm
60 mm	120 mm	30 mm	25 mm	8.3 cm
36 mm	9 cm	21 mm	8.5 cm	67 mm
42 mm	32 mm	7.2 cm	70 mm	50 mm

3.2 cm	7.3 cm	83 mm	2.5 cm
7 cm	70 mm	3.6 cm	4.3 cm
15 cm	6.7 cm	90 mm	5 cm
12 cm	5.2 cm	72 mm	85 mm
3 cm	9 cm	4 cm	2 cm






TOTAL

Name \_\_\_\_\_

**Change cm to m and m to cm**

0.2 m	1.5 m	0.6 m	0.5 m	1.42 m
0.33 m	120 cm	0.75 m	300 cm	1.4 m
0.98 m	0.8 m	0.8 m	0.05 m	1.1 m
1.2 m	210 cm	1.25 m	205 cm	130 cm
2 m	1.31 m	1.02 m	0.54 m	0.15 m

3 m	2.1 m	1.2 m	1.3 m
102 cm	200 cm	54 cm	142 cm
5 cm	125 cm	50 cm	15 cm
75 cm	150 cm	110 cm	2.05 m
131 cm	33 cm	80 cm	98 cm






TOTAL

Name \_\_\_\_\_

**Change m to km and km to m**

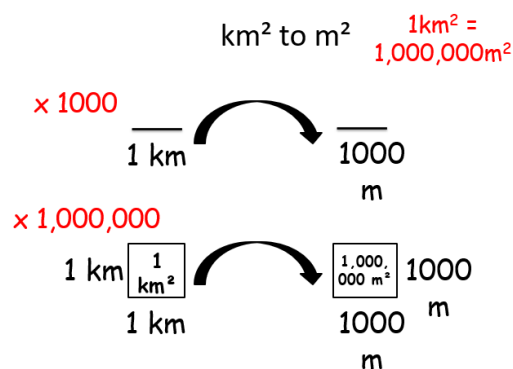
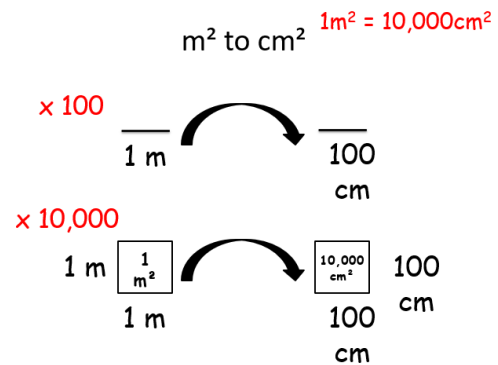
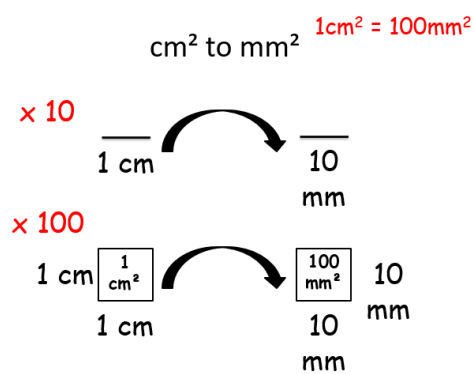
5100 m	95 m	0.3 km	0.65 km	1.065 km
1050 m	3 km	1.275 km	5510 m	0.5 km
1.2 km	0.6 km	0.2 km	0.8 km	0.05 km
1.06 km	1500 m	2.7 km	0.45 km	2100 m
925 m	1000 m	1.2 km	755 m	1045 m

0.755 km	1 km	3000 m	1.045 km
0.095 km	2.1 km	1.05 km	0.925 km
5.1 km	450 m	1275 m	5.51 km
1065 m	50 m	1200 m	650 m
1060 m	1.5 km	600 m	2700 m

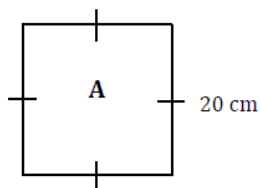




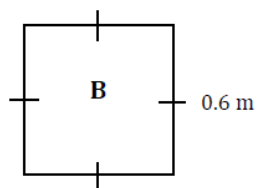

TOTAL



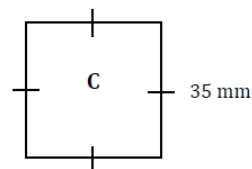
4. Complete the tables for the squares below.



Square A	
Side length	Area
..... mm	..... mm <sup>2</sup>
..... cm	..... cm <sup>2</sup>
..... m	..... m <sup>2</sup>



Square B	
Side length	Area
..... mm	..... mm <sup>2</sup>
..... cm	..... cm <sup>2</sup>
..... m	..... m <sup>2</sup>



Square C	
Side length	Area
..... mm	..... mm <sup>2</sup>
..... cm	..... cm <sup>2</sup>
..... m	..... m <sup>2</sup>

Circle the correct answer.

Express in cm<sup>2</sup>

- a) 4 m<sup>2</sup>      400 cm<sup>2</sup>      4000 cm<sup>2</sup>      40 000 cm<sup>2</sup>
- b) 0.5 m<sup>2</sup>      50 cm<sup>2</sup>      5000 cm<sup>2</sup>      50 000 cm<sup>2</sup>
- c) 300 mm<sup>2</sup>      0.3 cm<sup>2</sup>      3 cm<sup>2</sup>      30 cm<sup>2</sup>



Express in  $\text{mm}^2$

- d)  $16 \text{ cm}^2$        $160 \text{ mm}^2$        $1600 \text{ mm}^2$        $16\,000 \text{ mm}^2$
- e)  $9.5 \text{ cm}^2$        $95 \text{ mm}^2$        $950 \text{ mm}^2$        $9500 \text{ mm}^2$

Express in  $\text{m}^2$

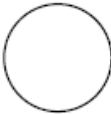
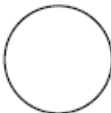
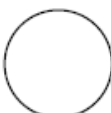
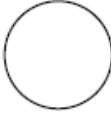
- f)  $760 \text{ cm}^2$        $0.076 \text{ m}^2$        $0.0076 \text{ m}^2$        $0.76 \text{ m}^2$

True or false?

- a) To convert  $\text{mm}^2$  to  $\text{cm}^2$ , divide by 100 .....
- b) To convert  $\text{cm}^2$  to  $\text{m}^2$ , divide by 100 .....
- c) To convert  $\text{mm}^2$  to  $\text{m}^2$ , multiply by 1 000 000.....

$<$	$\leq$	$>$	$\geq$
Less than	Less than or equal to	Greater than	Greater than or equal to
$5 < 10$ 5 is less than 10	$x \leq 10$ x is less than 10 or equal to 10	$10 > 5$ 10 is greater than 5	$x \geq 15$ x is greater than 15 or equal to 15

11. Put the correct symbol, either =, < or >, in each circle:

- a)  $75 \text{ cm}^2$              $7.5 \text{ m}^2$
- b)  $35 \text{ m}^2$              $350\,000 \text{ cm}^2$
- c)  $125\,00 \text{ cm}^2$              $12.5 \text{ m}^2$
- d)  $0.81 \text{ m}^2$              $81 \text{ cm}^2$



7. Complete the table below:

$\text{mm}^2$	$\text{cm}^2$	$\text{m}^2$
		0.4
	640	
12500		
	$y$	
$x$		



8. A rectangular rug measures 6 m by 4 m.

What is the total cost of cleaning this rug at £1.20 per square metre?


9. A roll of wallpaper is 10 m long and 50 cm wide.

Calculate its area in **square metres**.

10. A school hall measuring 10 m by 15 m is to be covered with square floor tiles with a side length of 50 cm.

How many tiles are required to cover the school hall?

1. John has worked out the perimeter of the shape below. What has he done wrong?  
Correct his work.

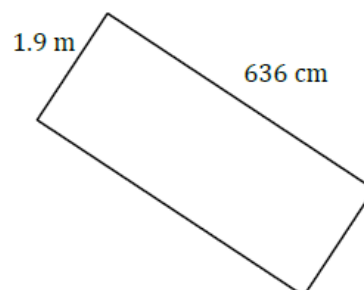


John's work

The perimeter is

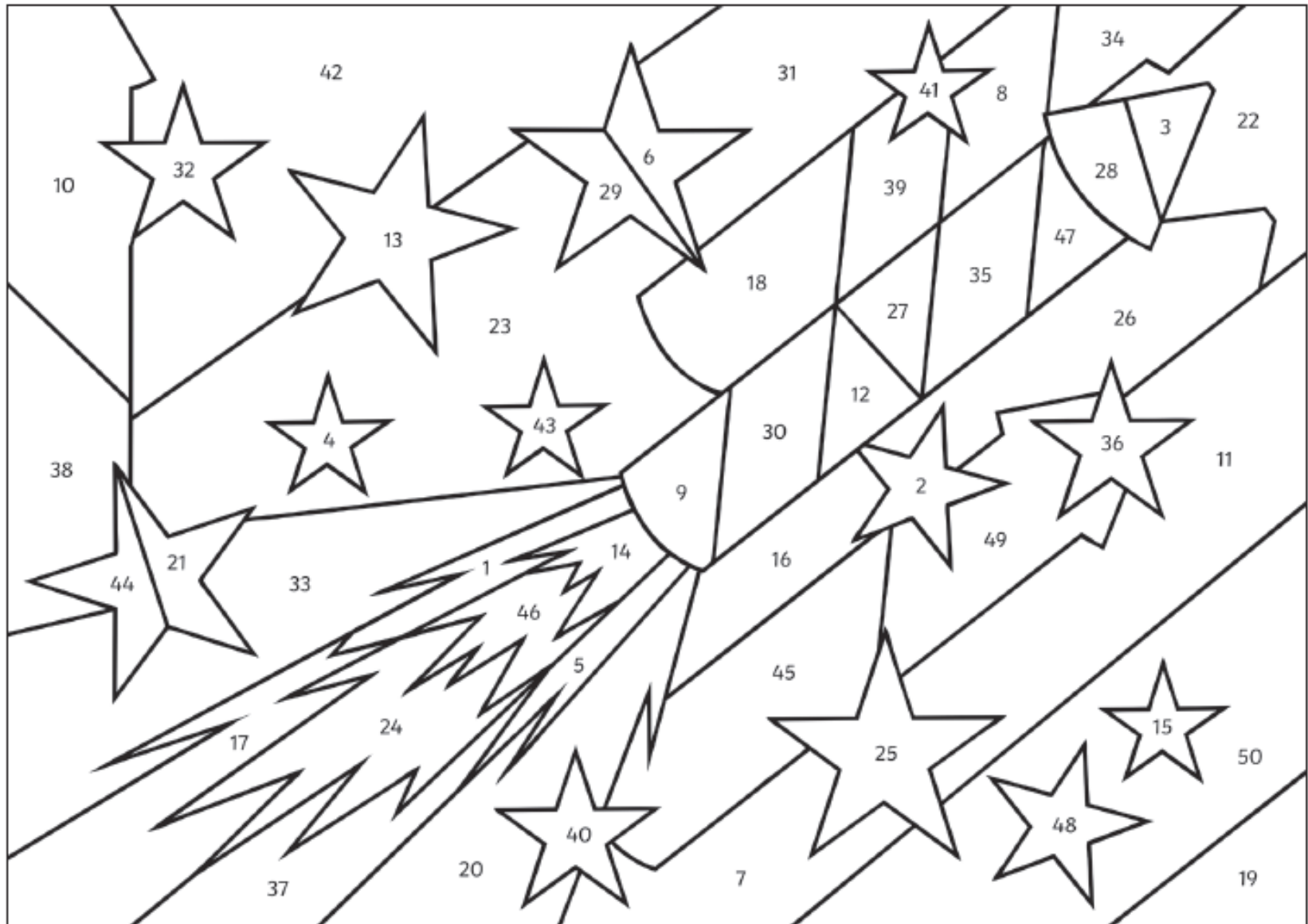
$$15 \text{ mm} + 2.5 \text{ cm} + 15 \text{ mm} + 2.5 \text{ cm} =$$
$$30 + 5 = 35 \text{ mm}$$

2. Calculate the perimeter of this rectangle.



3. Draw five different rectangles with the area of  $12 \text{ cm}^2$ .  
Work out the perimeter of each of your rectangles.

**Converting Between Units of Measure  
for Area and Volume**



## Converting Between Units of Measure for Area and Volume Bronze

Convert each unit of measure, then use the key to shade each section the correct colour.

Yellow	Orange	Red	Light Blue	Blue
$v < 100$	$100 \leq v < 200$	$200 \leq v < 300$	$300 \leq v < 400$	$400 \leq v < 1000$

- |  |  |  |
|--|--|--|
| 1. Convert $0.0129\text{m}^2$ to $\text{cm}^2$ _____         | 18. Convert $0.0885\text{m}^2$ to $\text{cm}^2$ _____        | 35. Convert $2\,124\,000\text{cm}^2$ to $\text{m}^2$ _____   |
| 2. Convert $4.5\text{cm}^2$ to $\text{mm}^2$ _____           | 19. Convert $507\,900\,000\text{mm}^2$ to $\text{m}^2$ _____ | 36. Convert $0.53\text{cm}^2$ to $\text{mm}^2$ _____         |
| 3. Convert $2.8\text{cm}^2$ to $\text{mm}^2$ _____           | 20. Convert $0.05\text{m}^2$ to $\text{cm}^2$ _____          | 37. Convert $130\,000\,000\text{mm}^2$ to $\text{m}^2$ _____ |
| 4. Convert $0.97\text{cm}^2$ to $\text{mm}^2$ _____          | 21. Convert $8.64\text{cm}^2$ to $\text{mm}^2$ _____         | 38. Convert $0.0997\text{m}^2$ to $\text{cm}^2$ _____        |
| 5. Convert $0.0114\text{m}^2$ to $\text{cm}^2$ _____         | 22. Convert $50\,200\text{mm}^2$ to $\text{cm}^2$ _____      | 39. Convert $7.57\text{cm}^2$ to $\text{mm}^2$ _____         |
| 6. Convert $0.0063\text{m}^2$ to $\text{cm}^2$ _____         | 23. Convert $0.00098934\text{m}^2$ to $\text{mm}^2$ _____    | 40. Convert $77\,500\text{mm}^2$ to $\text{cm}^2$ _____      |
| 7. Convert $8.41\text{cm}^2$ to $\text{mm}^2$ _____          | 24. Convert $63\,000\,000\text{mm}^2$ to $\text{m}^2$ _____  | 41. Convert $0.0817\text{m}^2$ to $\text{cm}^2$ _____        |
| 8. Convert $0.04977\text{m}^2$ to $\text{cm}^2$ _____        | 25. Convert $9\,550\,000\text{mm}^2$ to $\text{m}^2$ _____   | 42. Convert $70\,700\text{mm}^2$ to $\text{cm}^2$ _____      |
| 9. Convert $0.03964\text{m}^2$ to $\text{cm}^2$ _____        | 26. Convert $0.0549\text{m}^2$ to $\text{cm}^2$ _____        | 43. Convert $74\,400\text{mm}^2$ to $\text{cm}^2$ _____      |
| 10. Convert $0.04489\text{m}^2$ to $\text{cm}^2$ _____       | 27. Convert $0.0332\text{m}^2$ to $\text{cm}^2$ _____        | 44. Convert $0.000856\text{m}^2$ to $\text{mm}^2$ _____      |
| 11. Convert $405\,000\,000\text{mm}^2$ to $\text{m}^2$ _____ | 28. Convert $0.026386\text{m}^2$ to $\text{cm}^2$ _____      | 45. Convert $0.00094701\text{m}^2$ to $\text{mm}^2$ _____    |
| 12. Convert $3\,236\,200\text{cm}^2$ to $\text{m}^2$ _____   | 29. Convert $0.0013\text{m}^2$ to $\text{cm}^2$ _____        | 46. Convert $69\,000\,000\text{mm}^2$ to $\text{m}^2$ _____  |
| 13. Convert $46\,430\text{mm}^2$ to $\text{cm}^2$ _____      | 30. Convert $215\,000\,000\text{mm}^2$ to $\text{m}^2$ _____ | 47. Convert $300\,000\,000\text{mm}^2$ to $\text{m}^2$ _____ |
| 14. Convert $0.0000404\text{m}^2$ to $\text{mm}^2$ _____     | 31. Convert $97\,982\text{mm}^2$ to $\text{cm}^2$ _____      | 48. Convert $0.0982\text{m}^2$ to $\text{cm}^2$ _____        |
| 15. Convert $19\,881\text{cm}^2$ to $\text{m}^2$ _____       | 32. Convert $1\,570\,000\text{mm}^2$ to $\text{m}^2$ _____   | 49. Convert $0.000989\text{m}^2$ to $\text{mm}^2$ _____      |
| 16. Convert $48\,420\text{mm}^2$ to $\text{cm}^2$ _____      | 33. Convert $0.06833\text{m}^2$ to $\text{cm}^2$ _____       | 50. Convert $48\,810\text{mm}^2$ to $\text{cm}^2$ _____      |
| 17. Convert $10\,340\text{mm}^2$ to $\text{cm}^2$ _____      | 34. Convert $4.471\text{cm}^2$ to $\text{mm}^2$ _____        |  |



## Week 6:

- **L1:** to derive and apply formulae to calculate and solve problems involving perimeter and area of triangles, parallelograms and trapezia

### Demonstration Videos:

<https://corbettmaths.com/2013/12/20/area-of-a-rectangle-video-45/>

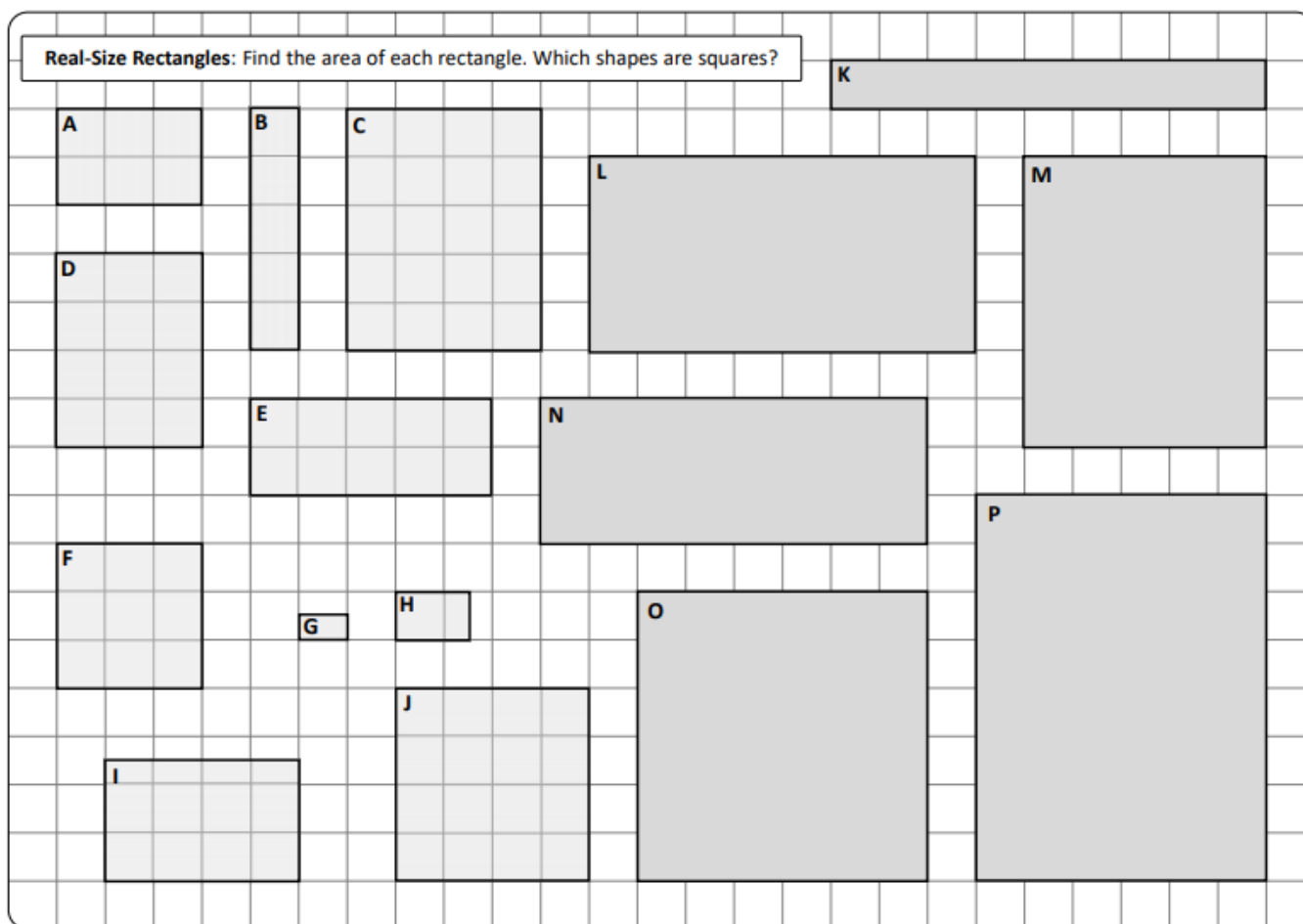
<https://corbettmaths.com/2012/08/02/area-of-compound-shapes/>

<https://corbettmaths.com/2013/12/21/area-of-a-parallelogram-video-44/>

<https://corbettmaths.com/2012/08/02/area-of-a-trapezium-video/>

### Tasks:

**Real-Size Rectangles:** Find the area of each rectangle. Which shapes are squares?



Name

Calculating the area of a rectangle

15	50	30	56	24
20	77	36	21	66
10	10	30	20	4
44	60	72	60	99
27	54	12	48	42

base = 3 cm, height = 8 cm

base = 2 cm, height = 2 cm

base = 6 cm, height = 9 cm

base = 3 cm, height = 5 cm

base = 5 cm, height = 12 cm

base = 7 cm, height = 11 cm

base = 11 cm, height = 9 cm

base = 4 cm, height = 5 cm

base = 6 cm, height = 7 cm

base = 7 cm, height = 3 cm

base = 2 cm, height = 5 cm

base = 6 cm, height = 10 cm

base = 3 cm, height = 10 cm

base = 6 cm, height = 8 cm

base = 9 cm, height = 8 cm

base = 7 cm, height = 8 cm

base = 3 cm, height = 4 cm

base = 4 cm, height = 11 cm

base = 5 cm, height = 6 cm

base = 2 cm, height = 5 cm

height

base

TOTAL

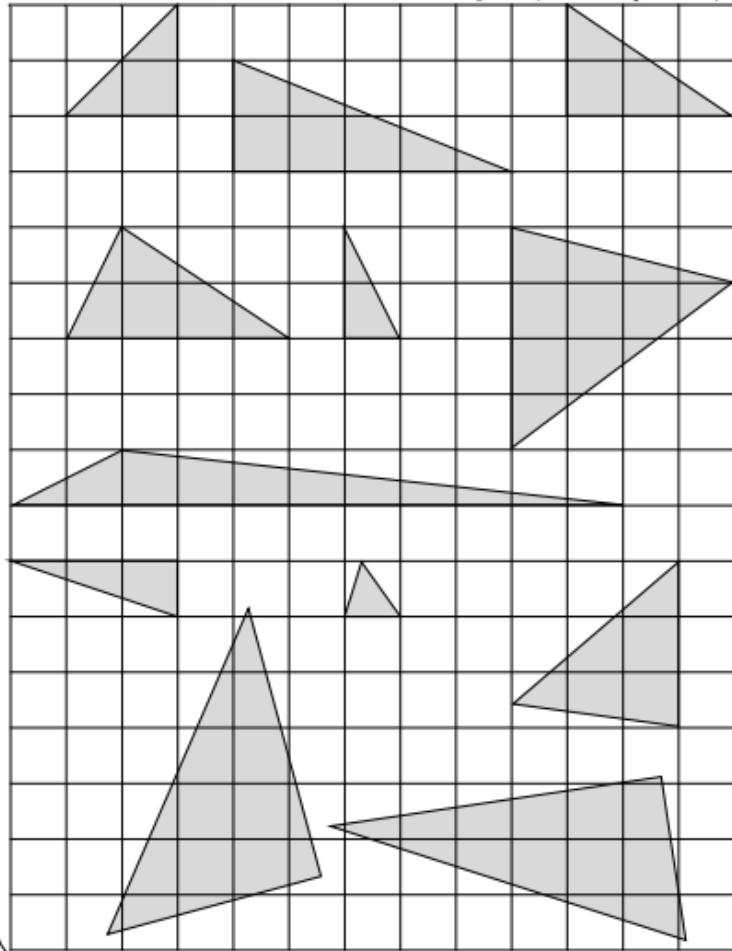


## True Triangles

Order the triangles from  
smallest in area to largest.

①

2 cm

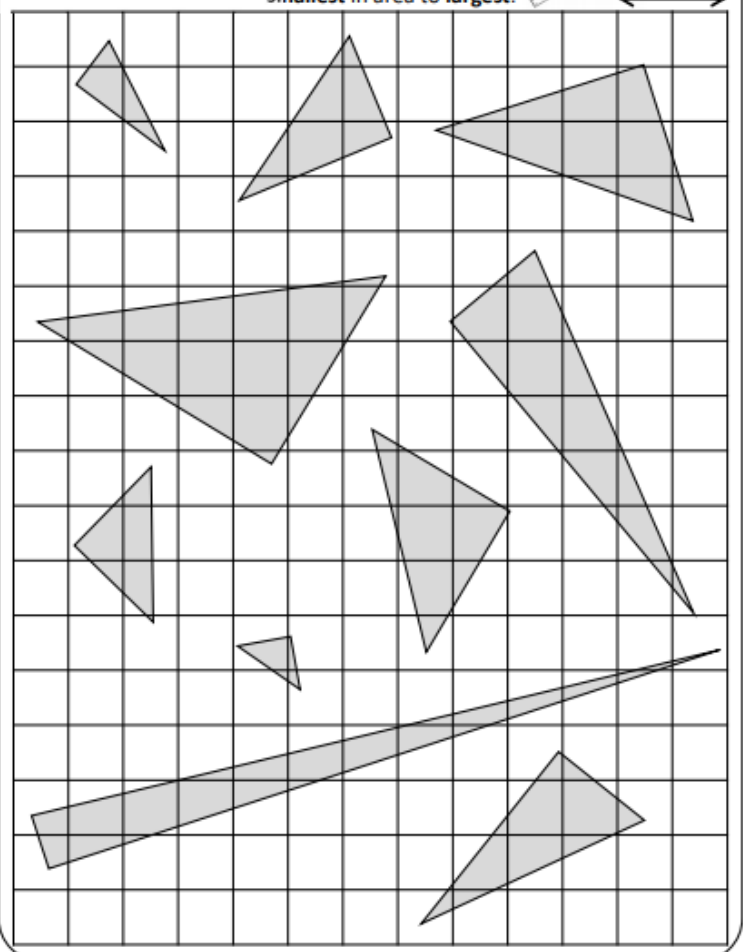


## True Triangles

Order the triangles from  
smallest in area to largest.

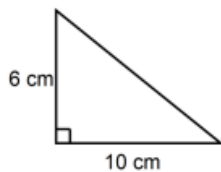
②

2 cm

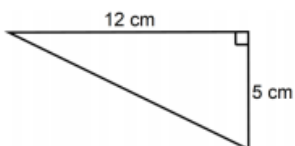


Calculate area of the triangles

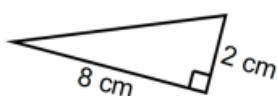
1)



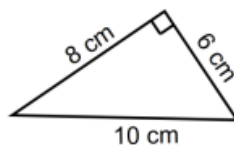
2)



3)

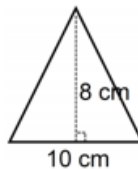


4)

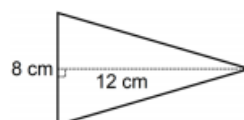


Calculate area of the triangles

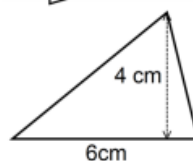
1)



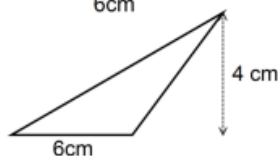
2)



3)

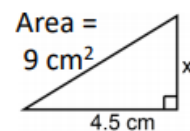


4)

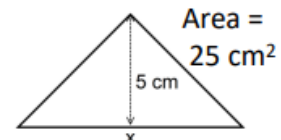


Calculate x

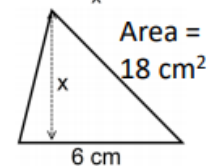
1)



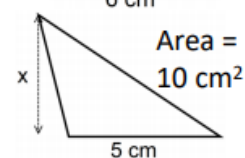
2)



3)

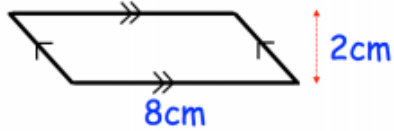


4)

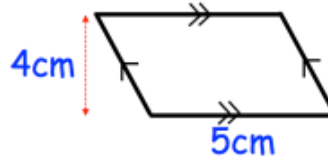


**Question 2:** Work out the area of each of the parallelograms below.  
Include suitable units.

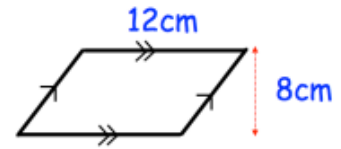
(a)



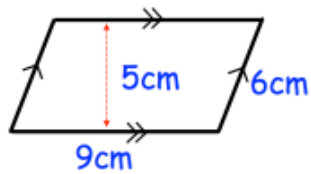
(b)



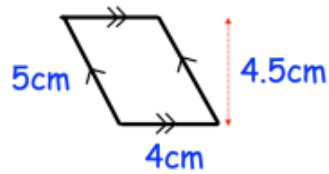
(c)



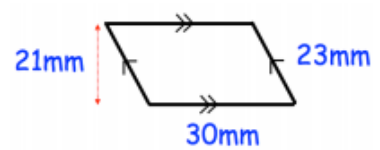
(d)



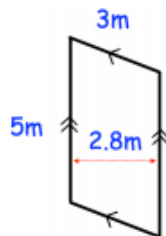
(e)



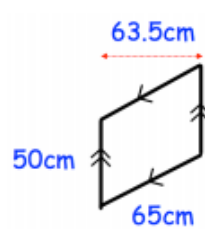
(f)



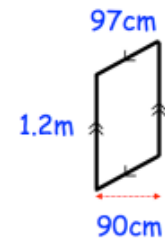
(g)



(h)

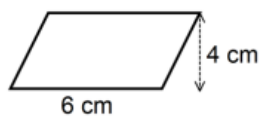


(i)

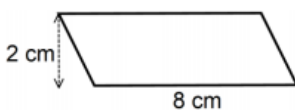


Calculate the area of the parallelograms

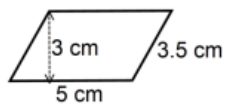
1)



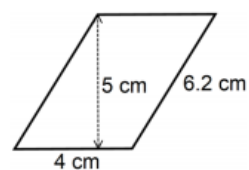
2)



3)

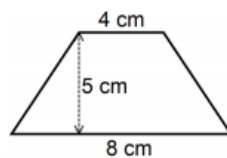


4)

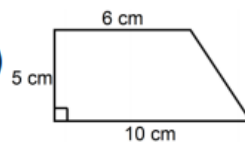


Calculate the area of the trapeziums

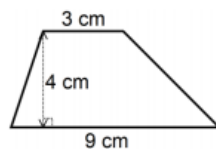
1)



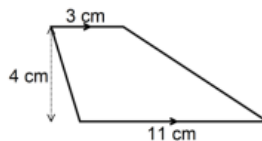
2)



3)



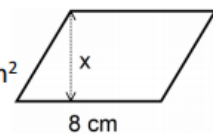
4)



Calculate x

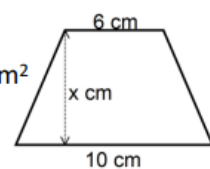
1)

Area = 24 cm<sup>2</sup>



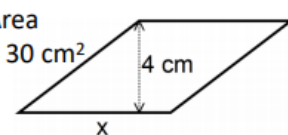
2)

Area = 24 cm<sup>2</sup>



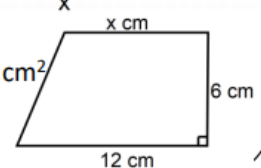
3)

Area = 30 cm<sup>2</sup>



4)

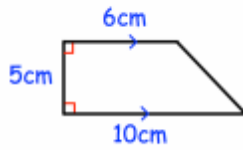
Area = 48 cm<sup>2</sup>



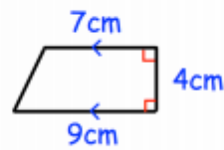


Question 1: Find the area of each trapezium.

(a)



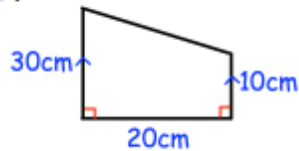
(b)



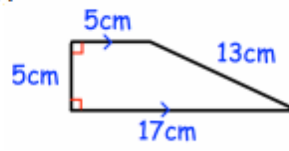
(c)



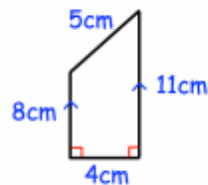
(d)



(e)

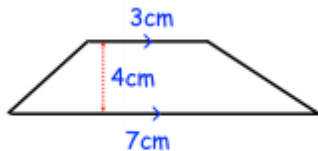


(f)

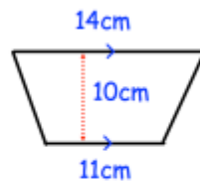


Question 2: Find the area of each trapezium.

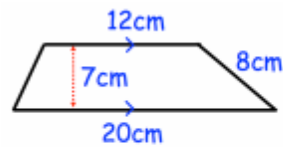
(a)



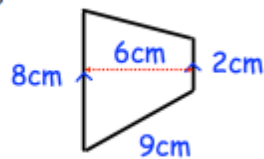
(b)



(c)



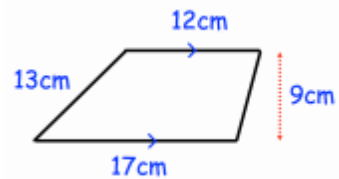
(d)



(e)

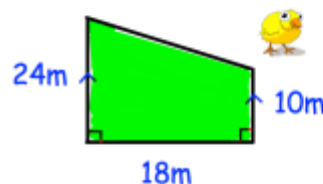


(f)

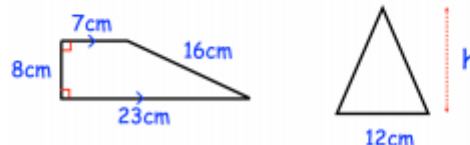


Question 1: Sketch five different trapezia with an area of  $80\text{cm}^2$

Question 2: Mr Taylor keeps chickens in the field shown.  
Each chicken needs  $3\text{m}^2$ .  
What is the maximum number of chickens he can keep in the field?

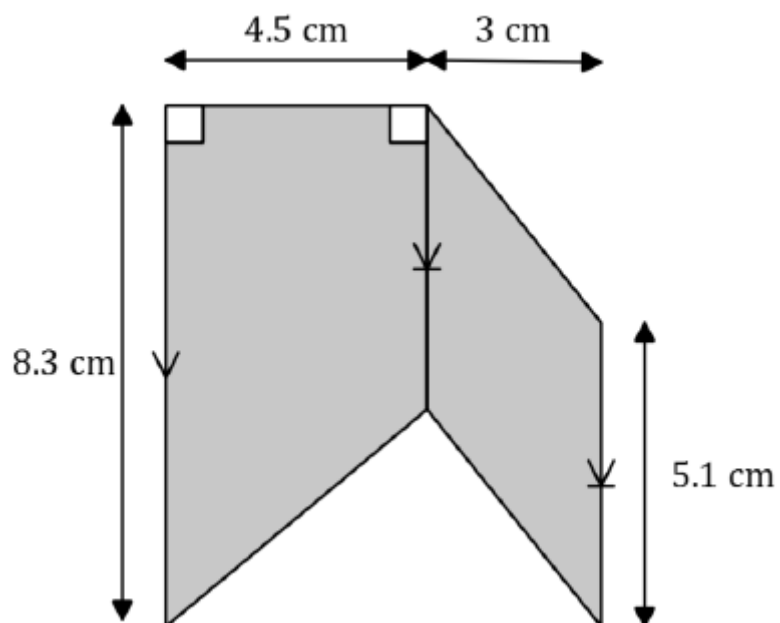
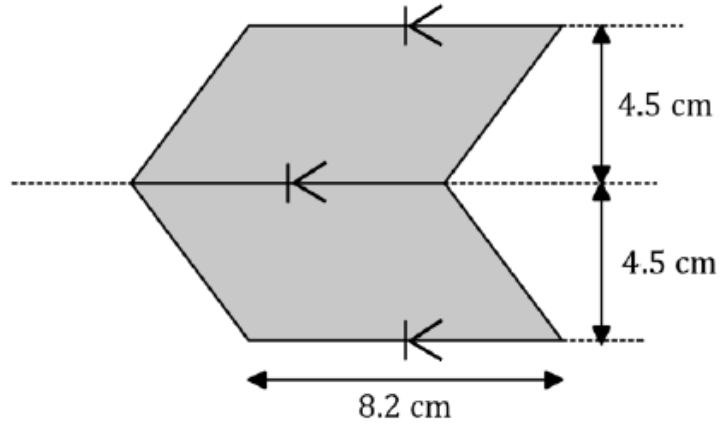


Question 3: The trapezium and the triangle have the same area.  
Calculate the height of the triangle.



2. Calculate the area of the following shapes.

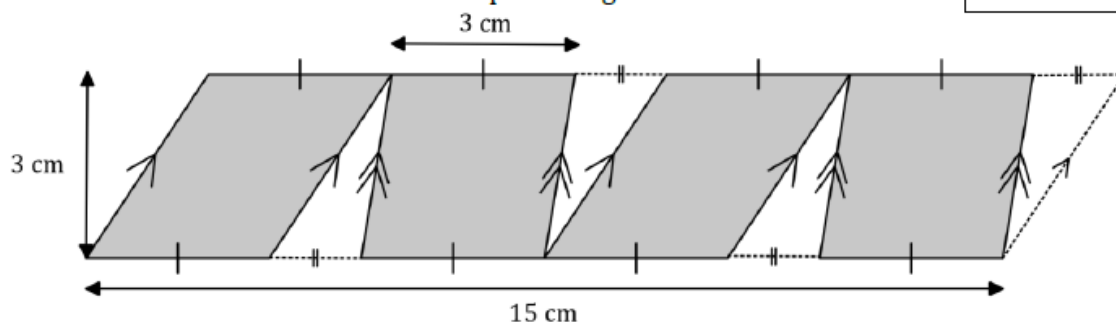
Diagrams not  
drawn  
accurately





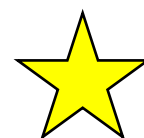
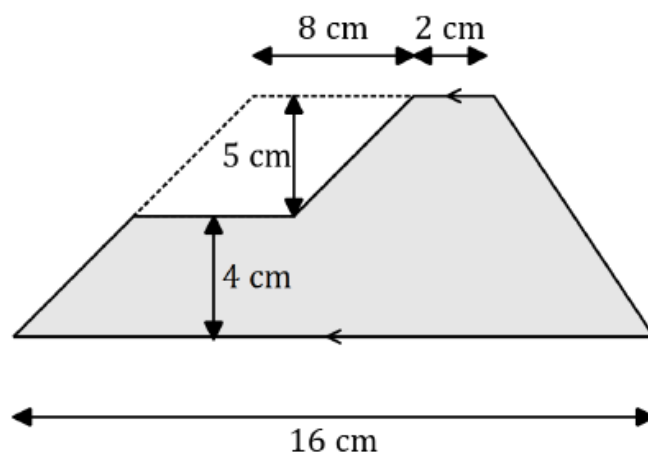
3. Work out the total area of the shaded parallelograms.

Diagram not  
drawn  
accurately



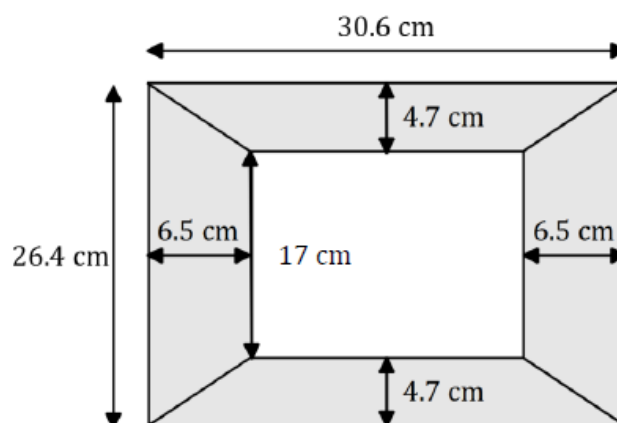
8. Work out the shaded area.

Diagram not  
drawn  
accurately



10. A picture frame is made by joining 4 trapezium-shaped pieces of wood together.

a) Find the area of each trapezium and the total area of the frame.



Attainment Band :	Unit 3 - Construction and loci, Angles in parallel lines and Angles in polygons	
	Knowledge and Understanding	Skills
Yellow Plus	Understands how to convert measurements when squared 6 <sup>2</sup>	Converts cm <sup>2</sup> to m <sup>2</sup> when solving problems 6 Finds the area of compound shapes involving triangles, trapeziums and parallelograms 11 Sets up and solves an equation involving angles in parallel lines 10
Yellow	Understands how to solve problems involving angles in parallel lines 4 Understands how to construct triangles 2 Derives and uses the standard ruler and compass constructions 3	Identifies the different types of angles formed by parallel lines and a transversal such as corresponding angles, alternate angles and interior angles 4 Uses the various properties of angles in parallel lines to solve problems 5
Blue	Recognises how to find the area of various shapes 11 Understands that angles in a triangle add up to 180 degrees 1	Constructs a triangle given three sides using a compass 2 Finds missing angles in geometrical figures 3a Draws a rhombus given two sides and one angle 3b Solves problems with angles in triangles 5 Finds area of a trapezium 7 Solves real life problems involving area with conversions 8 Finds the area of a parallelogram 11
Green	Derives and illustrates properties of quadrilaterals 3 Understands how to convert standard units of measure 8	Draws a square given one side 9a Draws a quadrilateral with the parallel sides indicated 9b
White	Understands angle properties in a triangle 1	Identify mistakes in measuring angles 1