Stewards Academy

Maths Spring 1

Year 10 Foundation

Blended Learning Booklet

Name:

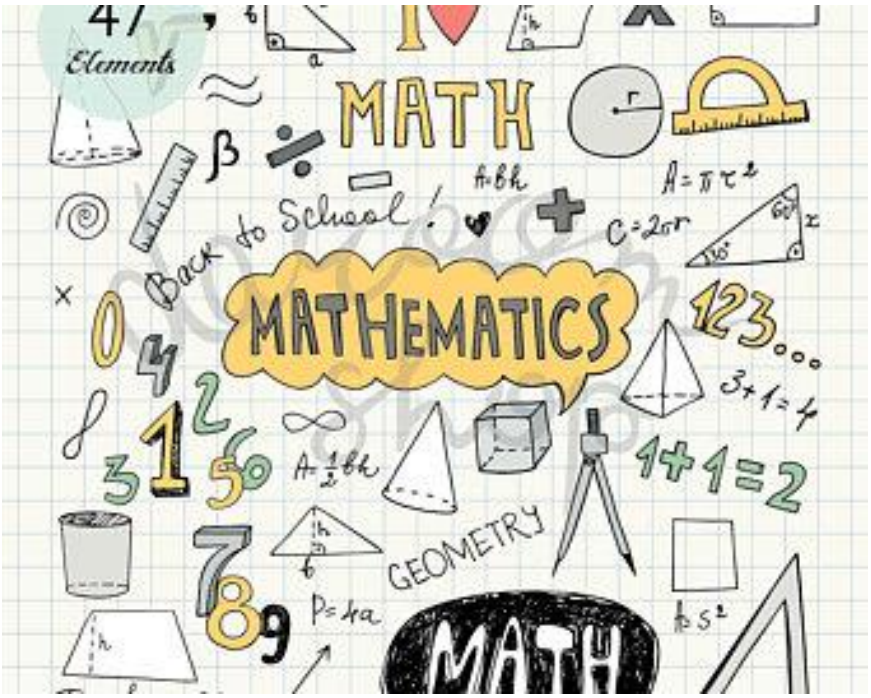
Form:

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.



Contents

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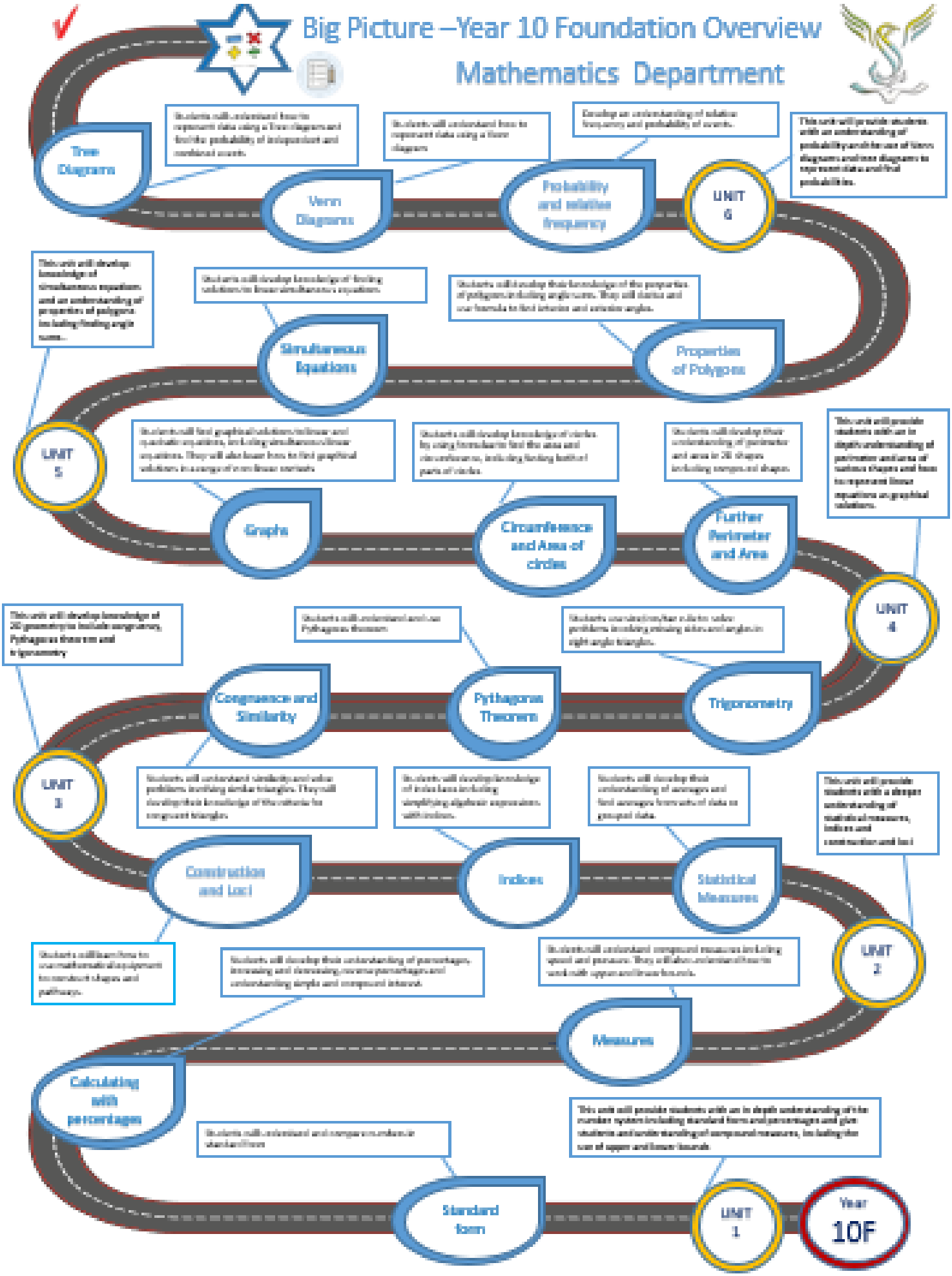


Year 10 - Foundation

Spring One

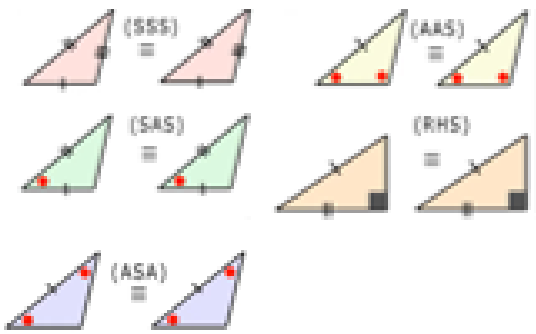
Congruency & Similarity, Pythagoras' Theorem, Trigonometry

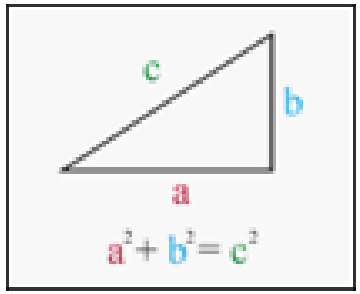
Revision Guide pages:

Pythagoras' Theorem – 82

Trigonometry – 83

Hints & Tips





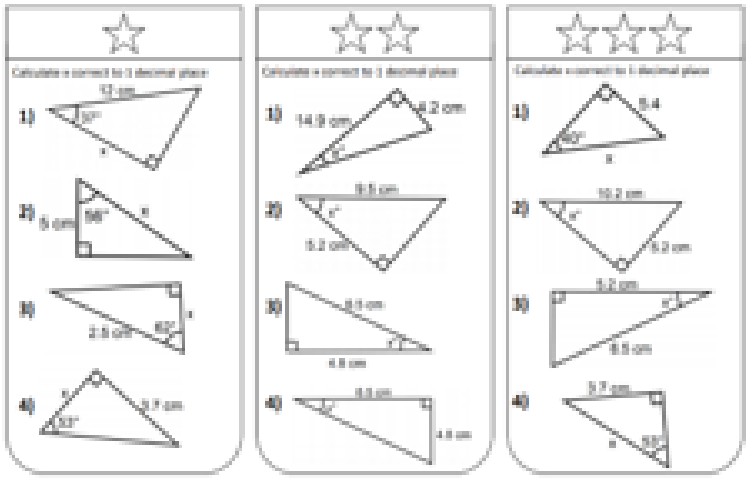
Lengths

$\sin\theta = \frac{opp}{hyp}$ $\cos\theta = \frac{adj}{hyp}$ $\tan\theta = \frac{opp}{adj}$

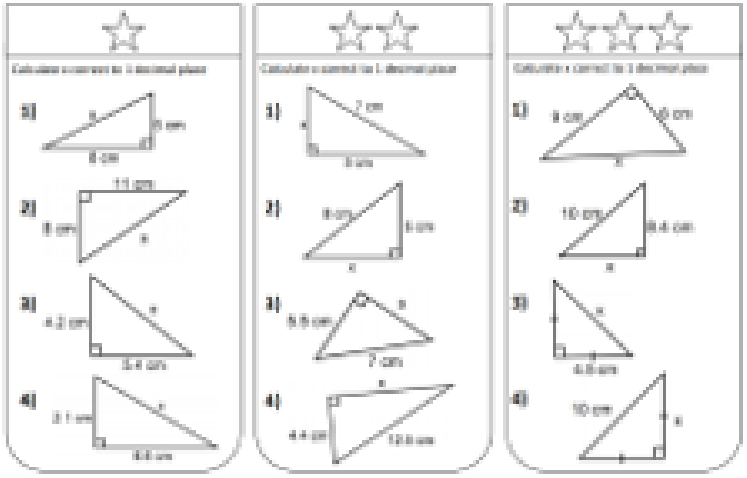
Angles

$\theta = \sin^{-1}\frac{opp}{hyp}$ $\theta = \cos^{-1}\frac{adj}{hyp}$ $\theta = \tan^{-1}\frac{opp}{adj}$

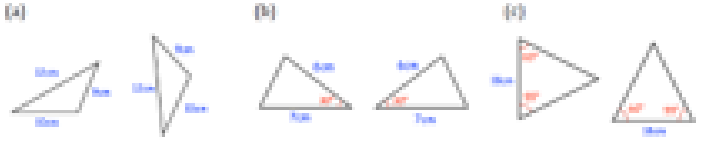
Task 1



Task 2

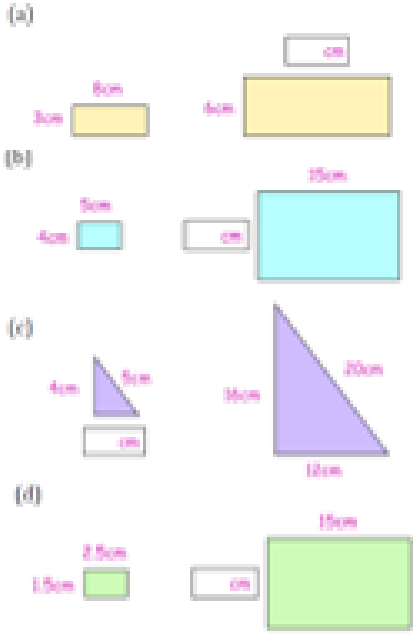


Task 4 – What condition makes each pair of triangles congruent?

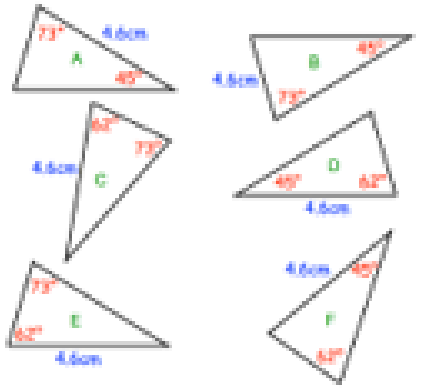


Task 3

The shapes in each part are similar. Find the length of the missing sides.



Task 5 – Which triangles are congruent to each other?



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Week 1:

- **LI: I understand congruency criteria for any shape including triangles**
- **LI: I can prove two triangles are similar using the correct notation and evidence**
- **LI: I can find missing angles in triangles using simple angle rules and rules of congruency**

Demonstration Videos:

https://corbettmaths.com/2012/08/10/congruent-and-similar-shapes/

https://corbettmaths.com/2013/04/15/congruent-triangles/

https://www.mathsgenie.co.uk/congruence.html

Important Information:

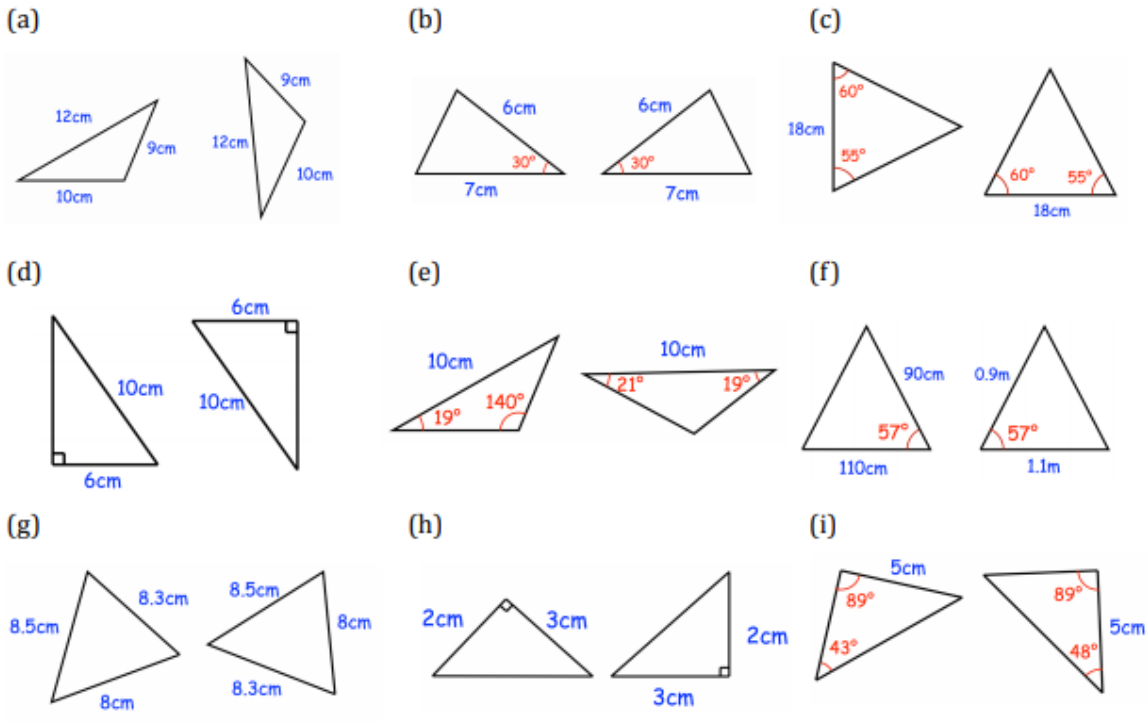
If you have two triangles with the same information, you can determine if they are congruent or not and this helps to solve problem questions

1. Side, side, side (SSS)
2. Side, angle, side (SAS)
3. Angle, side, angle (ASA)
4. Angle, angle, side (AAS)
5. Right-angle, hypotenuse, side (RHS)

Tasks:

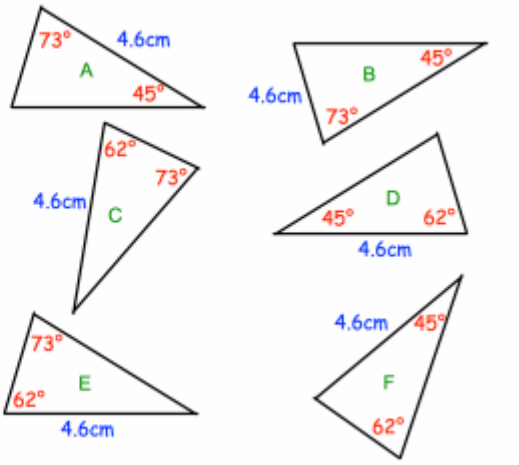
Task 1:

Question 1: The following pairs of triangles are congruent, state the condition that shows they are congruent.



Task 2:

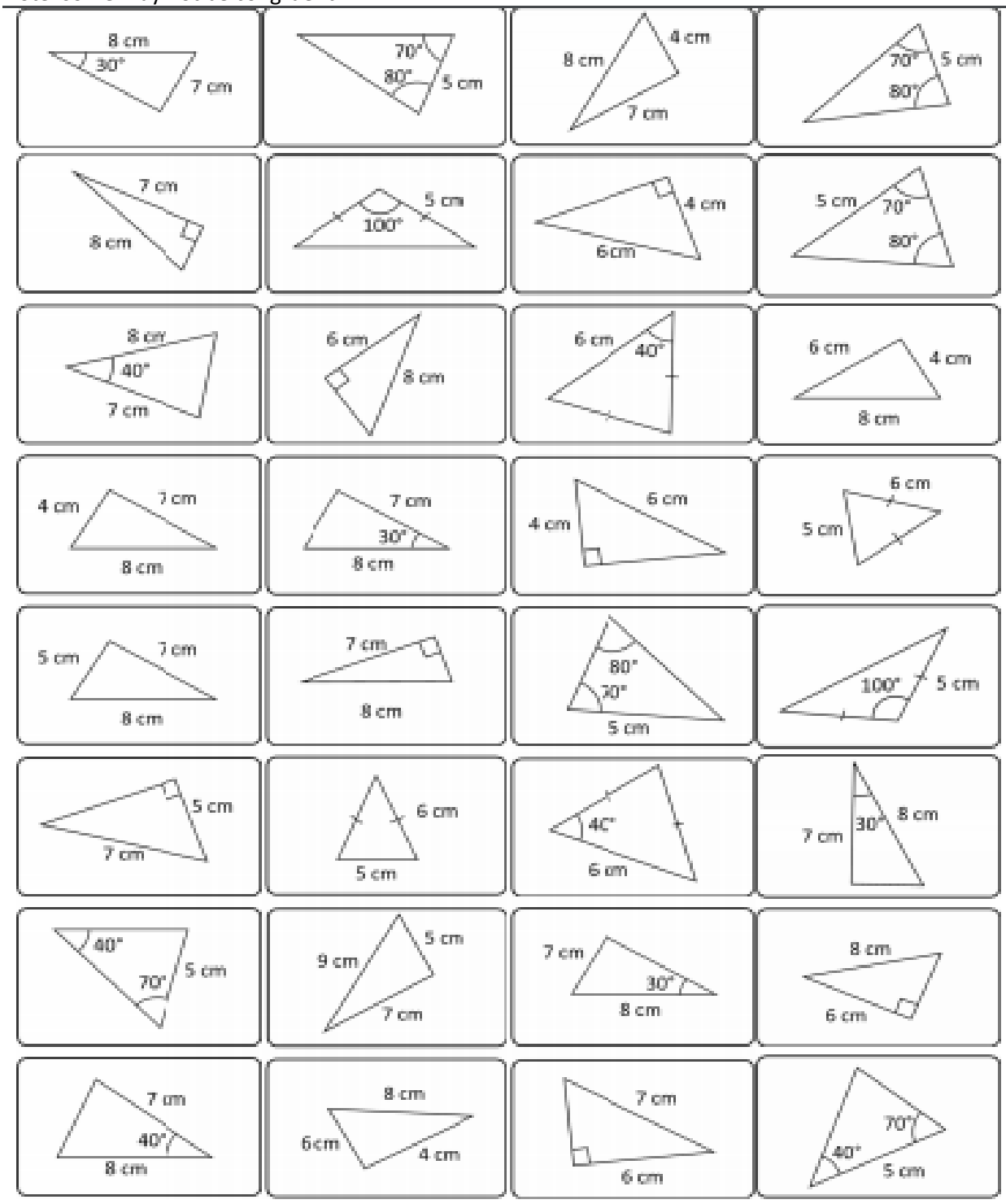
Question 2: Shown are six triangles.
Which triangles are congruent?



Hint: What do the angles in a triangle add up to?

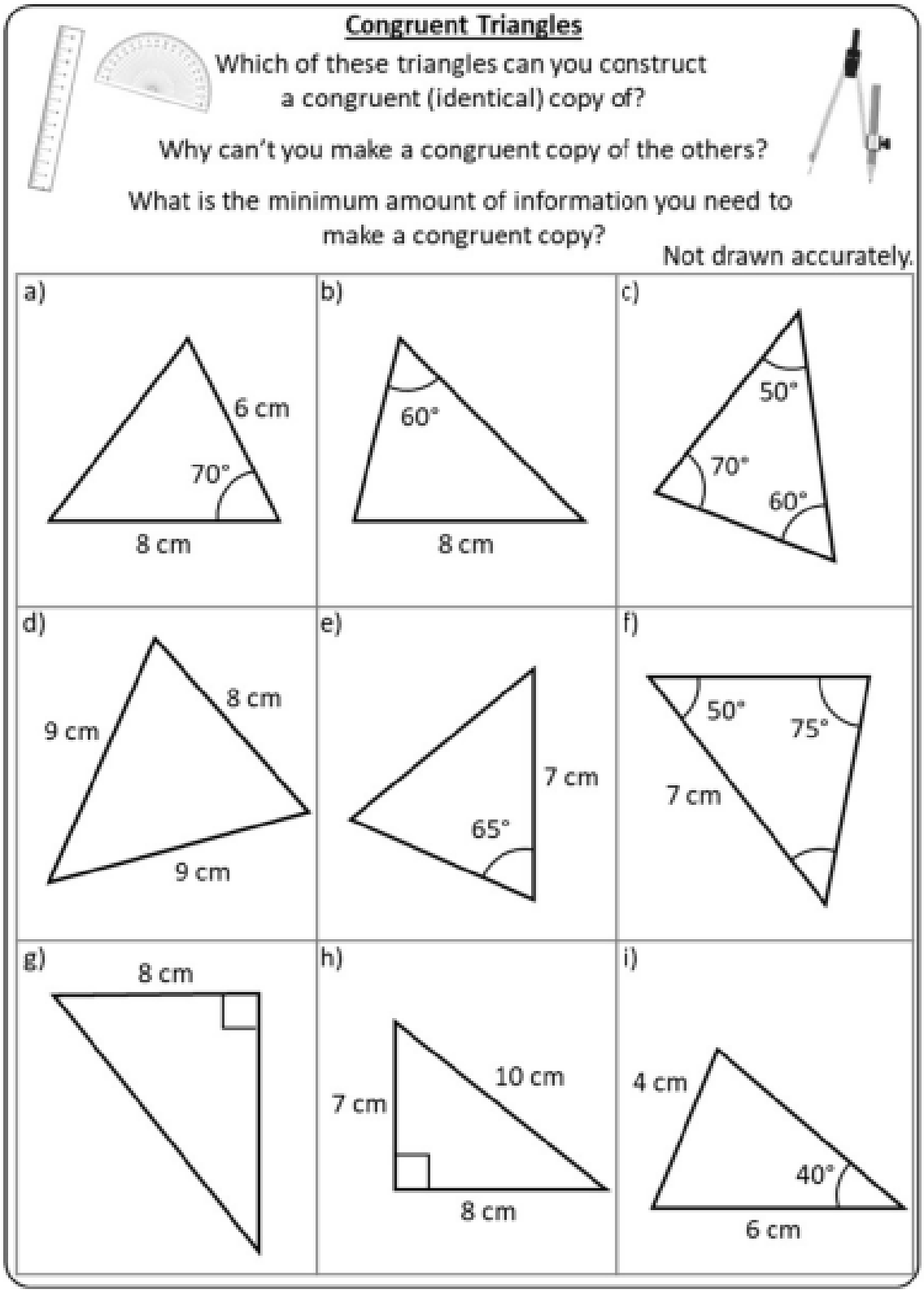
Task 3:

Match up the triangles which are congruent and state the condition that shows they are congruent.
Note: some may not be congruent.



RHS	RHS	RHS	ASA
SSS	SSS	SSS	ASA
SAS	SAS	SAS	ASA
Unknown	Not Congruent	Not Congruent	Unknown

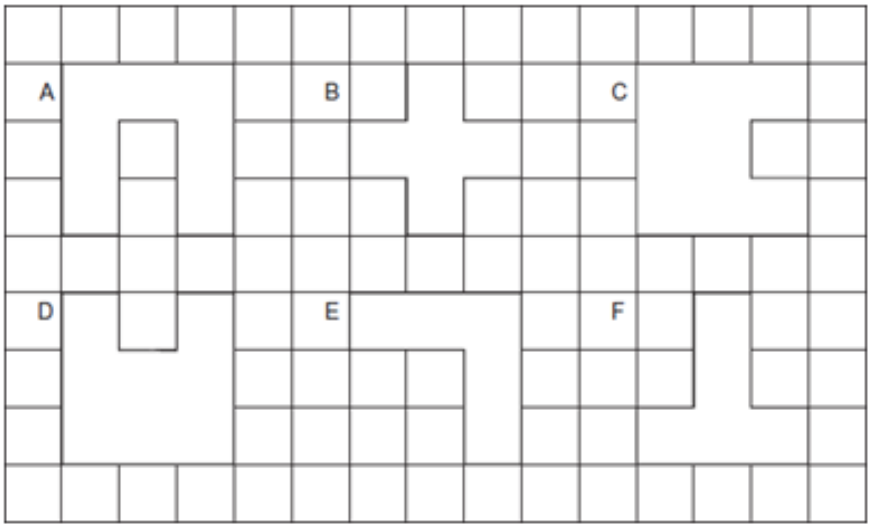
Task 4:



Hint: Revisit Autumn 2 booklet and constructing triangles
https://corbettmaths.com/2013/03/29/constructing-asa-triangles/
https://corbettmaths.com/2013/03/28/constructing-sas-triangles/
https://corbettmaths.com/2013/03/26/constructing-sss-triangles/

Task 5:

Q1.



(a) Which two shapes fit together to make a rectangle?

Answer _____ and _____

(1)

(b) Which two shapes are congruent?

Answer _____ and _____

(1)

(c) Which two shapes have the same area as shape B?

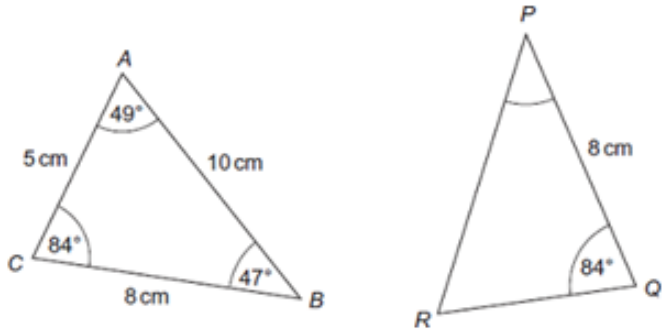
Answer _____ and _____

(2)

Q2.

These two triangles are congruent.

Not drawn accurately



(a) What is the size of angle P?
Circle your answer.

47° 49° 84° none of these

(1)

(b) What is the length of PR?
Circle your answer.

5 cm 8 cm 10 cm none of these

(1)

(Total 2 marks)

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Week 2:

- **LI: I understand the definition of similar shapes**
- **LI: I can find missing information of two similar shapes**

Demonstration Videos:

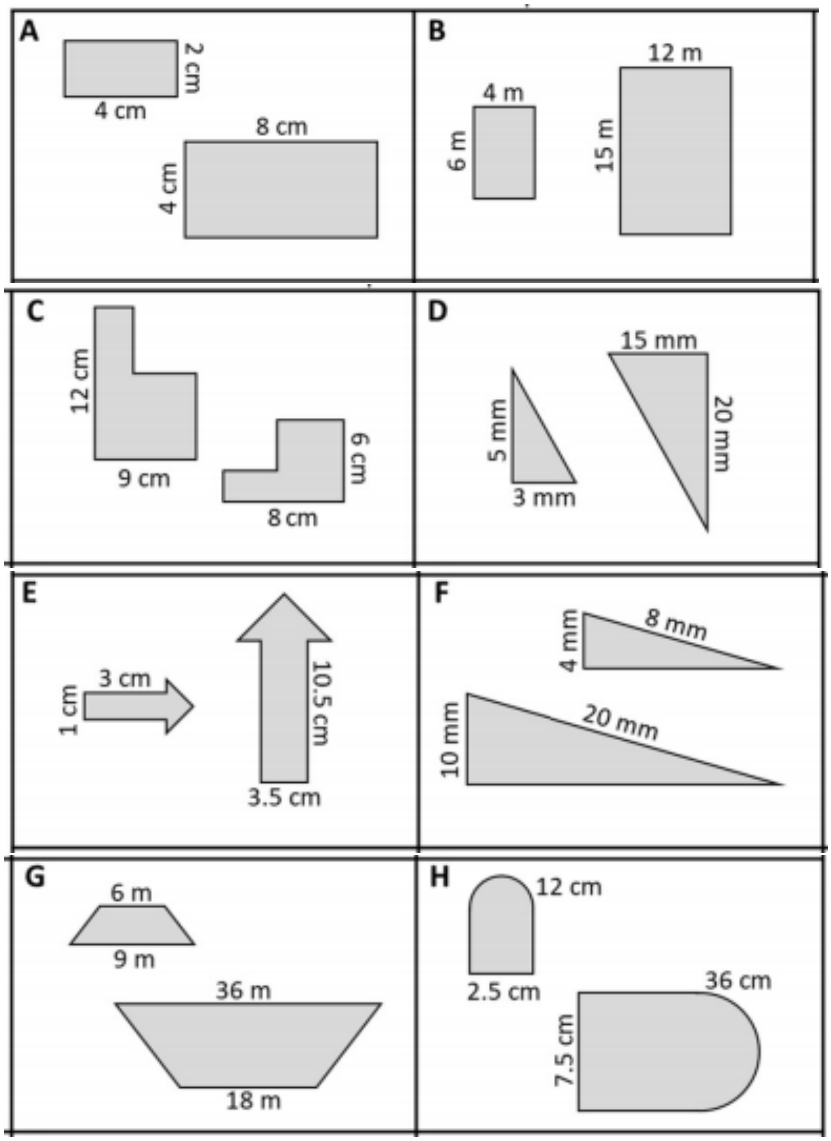
https://corbettmaths.com/2012/08/10/congruent-and-similar-shapes/

https://corbettmaths.com/2013/11/16/similarshapes/

Important Information:

You need to find the scale factor of enlargement to work out the missing sides.
Angles in similar shapes are the same!

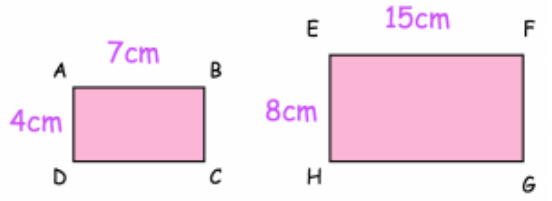
Task 1:
Work out whether these shapes are similar or not



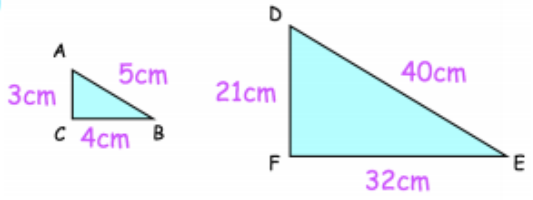
Task 2:

Question 2: These pairs of shapes are **not** similar.
Explain why.

(a)

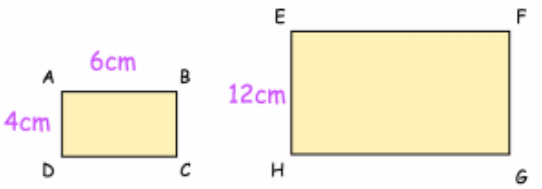


(b)



Question 3: Rectangles ABCD and EFGH are similar.

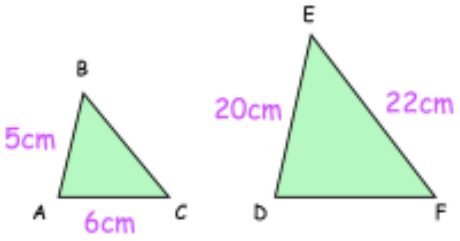
Work out the size of EF



Question 4: Triangles ABC and DEF are similar.

(a) Work out the length of DF

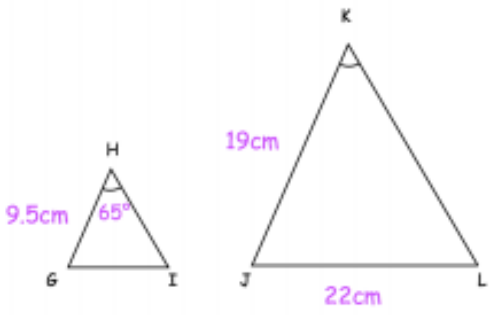
(b) Work out the length of BC



Question 5: Triangles GHI and JKL are similar.

(a) Write down the size of angle JKL

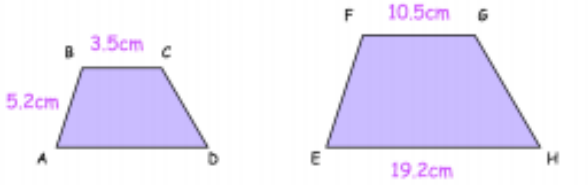
(b) Work out the length of GI



Question 6: Trapezium ABCD and trapezium EFGH are similar.

(a) Work out the length of EF

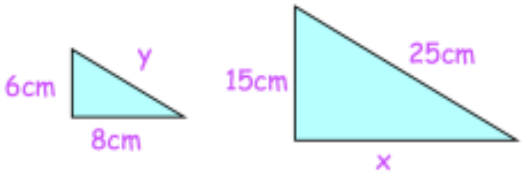
(b) Work out the length of AD



Question 7: The triangles below are similar

(a) Find the size of x

(b) Find the size of y

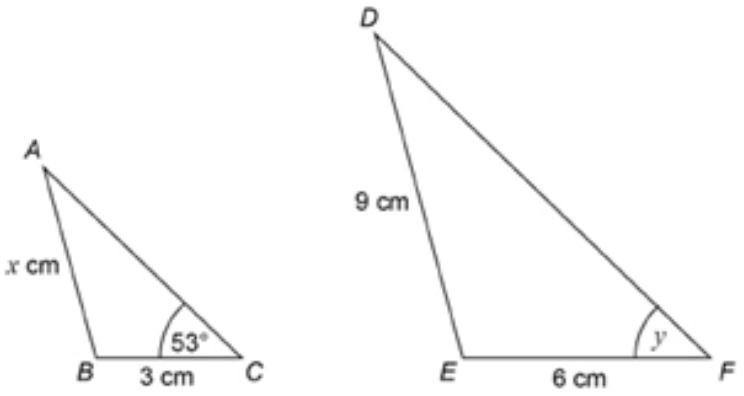


Exam questions:

Q1.

Triangles *ABC* and *DEF* are similar.

Not drawn accurately



(a) Work out the value of x.

(2)

(b) Write down the size of angle y.

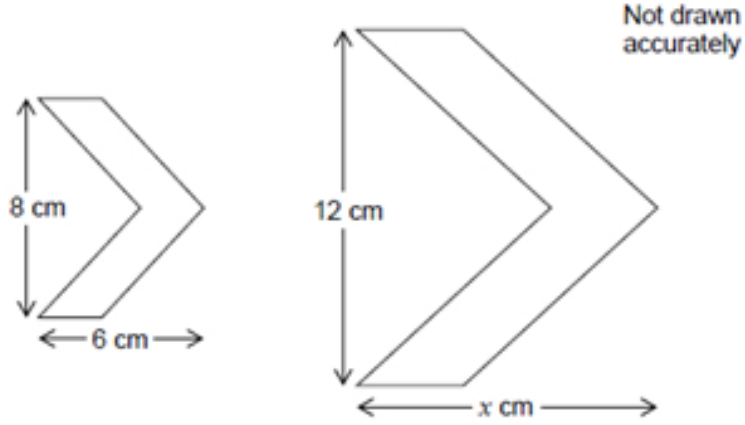
(1)

(Total 3 marks)

Q2.

These two shapes are similar.

Not drawn accurately



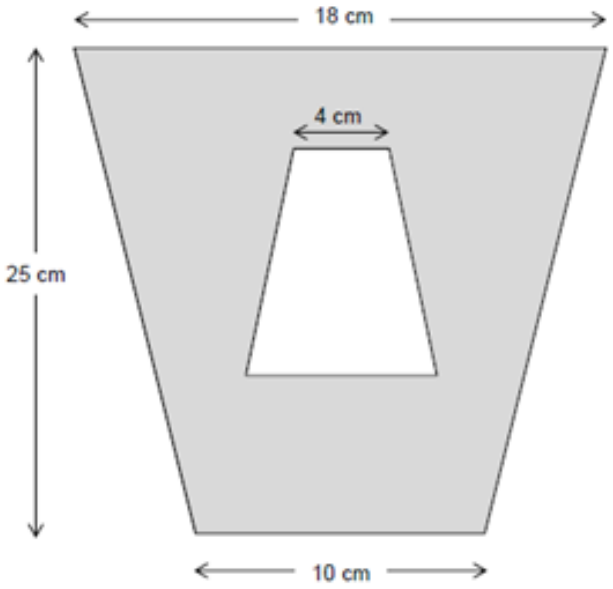
Work out the value of x.

(Total 3 marks)

Q3.

A pattern is made from two **similar** trapeziums.

Not drawn accurately



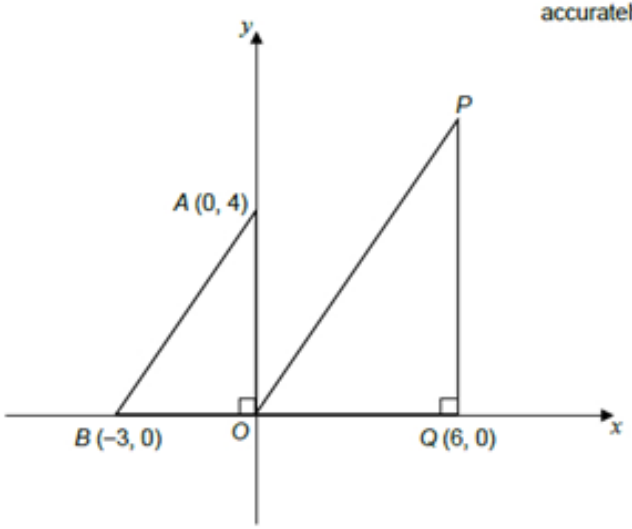
Show that the shaded area is 294 cm²

(Total 4 marks)

Q4.

Here are two right-angled triangles.

Not drawn accurately



(a) Assume that triangles *AOB* and *PQO* are similar.

Work out the area of triangle *PQO*.

(3)

(b) In fact, *QP* is longer than it would be if the triangles were similar.

How does this affect your answer to part (a)?

(1)

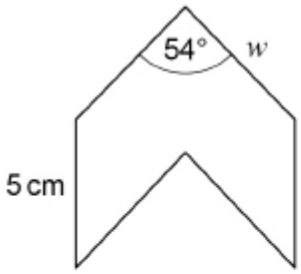
(Total 4 marks)

A and B are similar shapes.

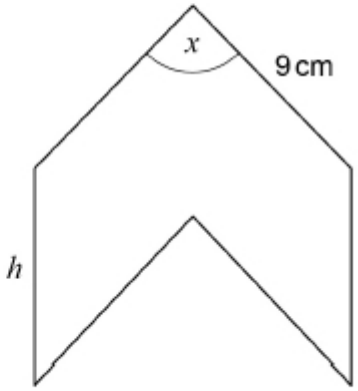
B is an enlargement of A with scale factor 1.5

Not drawn accurately

A



B



Work out the values of x, h and w.

Week 3:

- **LI: I can identify the hypotenuse in a right-angled triangle**
- **LI: I can use Pythagoras theorem to find the hypotenuse in a right-angled triangle**
- **LI: I can use Pythagoras theorem to find missing lengths in a right-angled triangle**

Demonstration Videos:

https://corbettmaths.com/2012/08/19/pythagoras-video/

https://corbettmaths.com/2013/06/22/pythagoras-rectangles-and-isosceles-triangles/

https://corbettmaths.com/2013/06/22/showing-a-triangle-is-right-angled/

https://www.mathsgenie.co.uk/pythagoras.html

Important Information:

A right-angled triangle has an angle of 90°

The hypotenuse is the longest side!

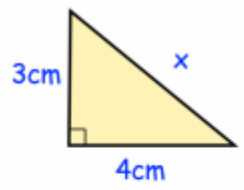
$a^2 + b^2 = c^2$

Task 1:

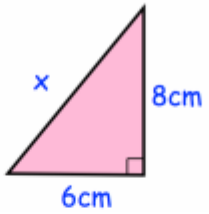
For each shape label the hypotenuse first, this will be your c^2!

Question 1: For each right angle triangle below, work out x

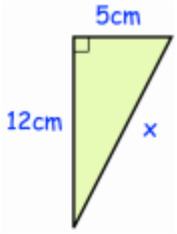
(a)



(b)

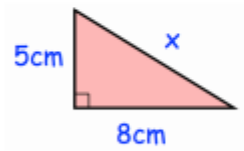


(c)

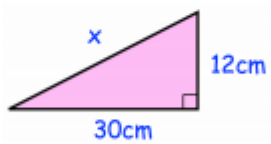


Question 2: Calculate x
Give each answer to 2 decimal places.

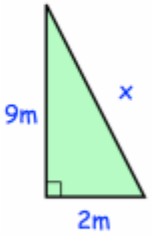
(a)



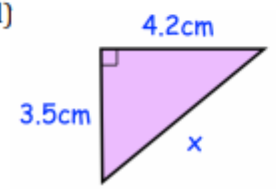
(b)



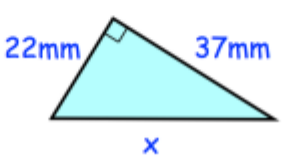
(c)



(d)



(e)

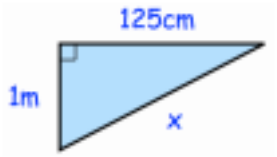


(f)

Task 2:

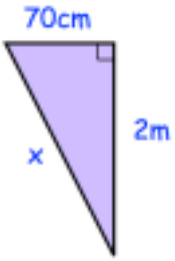
Question 3: Calculate x
Include suitable units and give each answer to 1 decimal place.

(a)



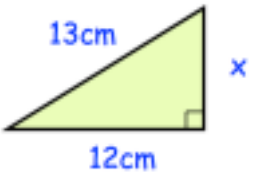
(b)

(c)

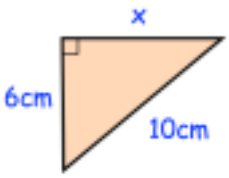


Question 4: For each right angle triangle below, work out x

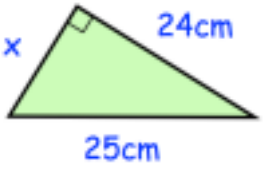
(a)



(b)

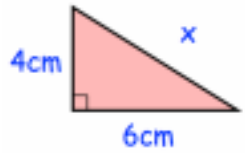


(c)



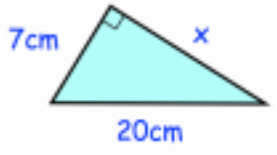
Question 6: Calculate x for each right angle triangle.
Give each answer to 2 decimal places.

(a)



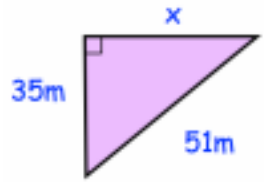
(b)

(c)

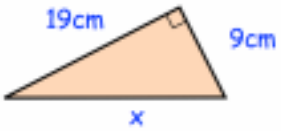


(d)

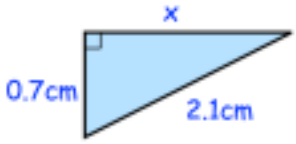
(e)



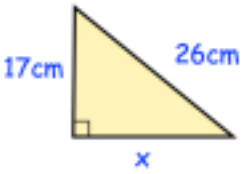
(f)



(g)

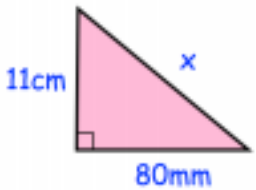


(h)



(i)

(j)



(k)

(l)

Task 3:

Highlight the relevant information for the last four questions and try to draw the triangle out.

Pythagoras Codebreaker

A	B	C	D	E	F	G	H	I	J	K	L	M
6.9	5.8	6.3	23.4	8.1	14.1	9.5	4.9	16.9	18.3	18	5.7	26.4

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
27	36.1	4.3	7.2	9.2	22.4	23	3.7	3.6	21.3	22.9	17	32

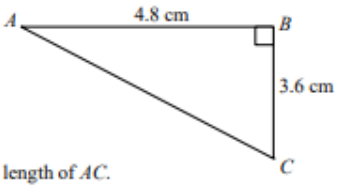
Answer the questions below (all answers are rounded to 1 decimal place), link your answers to the table above to reveal what I felt about the German sausage joke:

Calculate the missing length: 	Calculate the missing length: 	Calculate the missing length:

A 4 metre long ladder is leaning against a wall. The base of the ladder is 1.5 metres from the base of the wall. How high up the wall is the top of the ladder?	I travel 7km North then 6km West. How far am I from my start point?	The string attached to my kite is 30m long and the kite is immediately above a friend of mine who is 20m away from me. How high is my kite?	A 50m zip wire is attached to them top of a tower and to the ground 44.4m from the base of the tower. How tall is the tower?

Exam Questions:

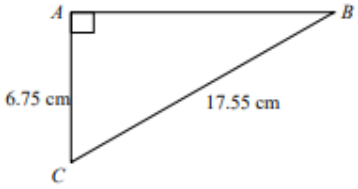
1



Calculate the length of AC.

(Total for question 1 is 3 marks)

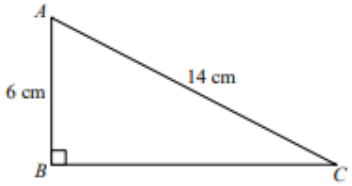
2



Calculate the length of AB.

(Total for question 2 is 3 marks)

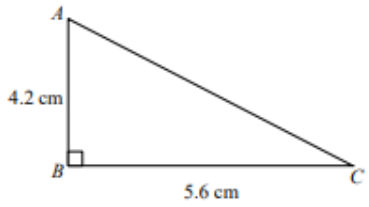
3



Calculate the length of BC.
Give your answer to 1 decimal place.

(Total for question 3 is 3 marks)

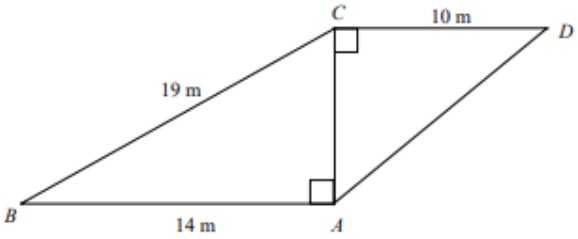
4



Calculate the length of AC.

(Total for question 4 is 3 marks)

5 Calculate the length of the AD.
Give your answer to 3 significant figures.



(Total for question 5 is 4 marks)

Week 4:

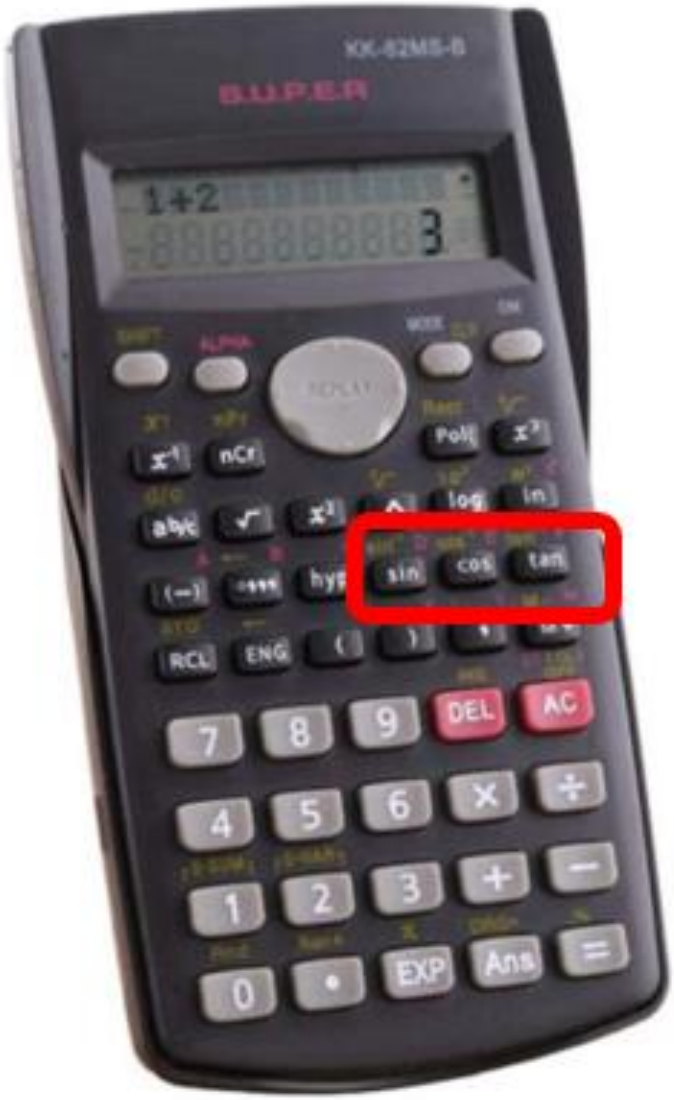
- **LI: I can identify the adjacent, opposite and hypotenuse of a right-angled triangle given an angle**
- **LI: I can decide which trig ratio to use to find a missing side in a right-angled triangle**
- **LI: I can use sin, cos or tan to find missing lengths in a right-angled triangle**
- **LI: I understand that tan is found by dividing sin and cos**

Demonstration Videos:

https://corbettmaths.com/2013/03/30/trigonometry-introduction/
https://corbettmaths.com/2013/03/30/trigonometry-missing-sides/
https://www.mathsgenie.co.uk/sohcahtoa.html

Important Information:

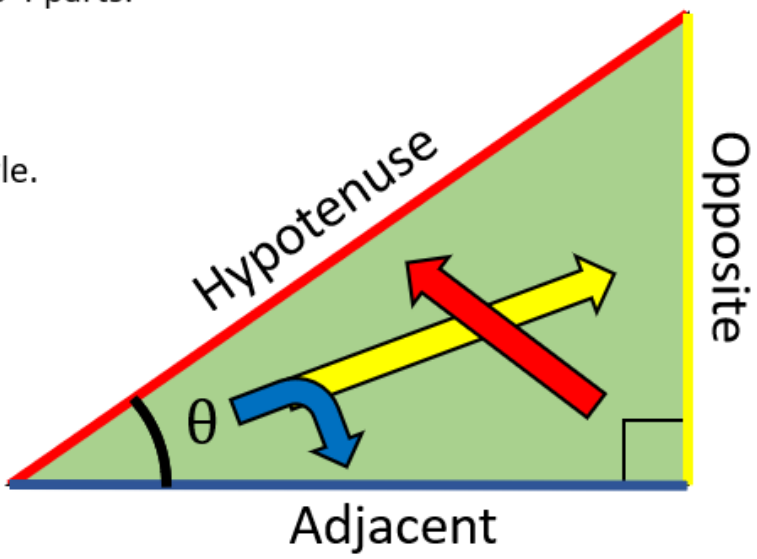
You will need a calculator to complete the majority of these tasks



You will be using these three buttons within this topic. Use the videos to understand how to use them and ask your teacher if you are unsure!

A right-angled triangle has 4 parts.

θ = Theta is either angle.



Hypotenuse – *always* opposite the right-angle & *always* longest.
Opposite – *always* opposite θ.
Adjacent – next to θ.

Remember this …. SOHCAHTOA

SOH	CAH	TOA
$Sin\ \theta = \frac{Opp}{Hyp}$	$Cos\ \theta = \frac{Adj}{Hyp}$	$Tan\ \theta = \frac{Opp}{Adj}$
O / Sin θ | H	A / Cos θ | H	O / Tan θ | A

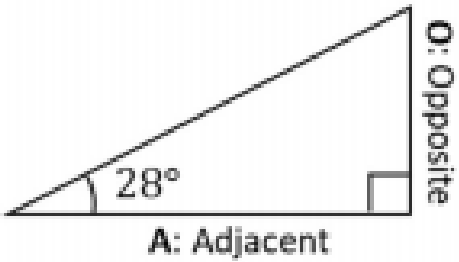
Task 1:

Trigonometry: Labelling Right-Angled Triangles

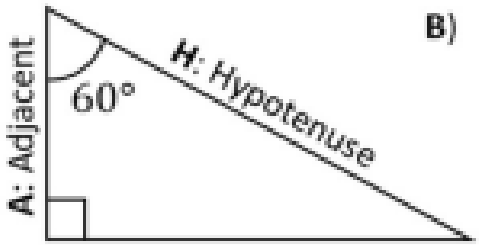
For each triangle, label each side with a letter:

H: Hypotenuse (the longest side)
O: Opposite (opposite the labelled angle)
A: Adjacent (next to the labelled angle)

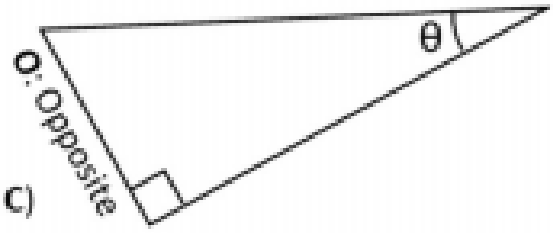
A)



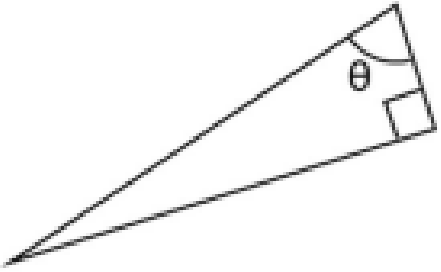
B)



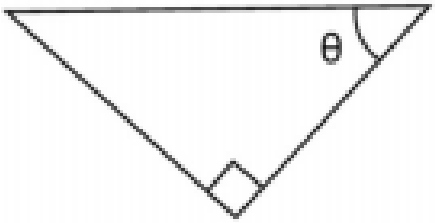
C)



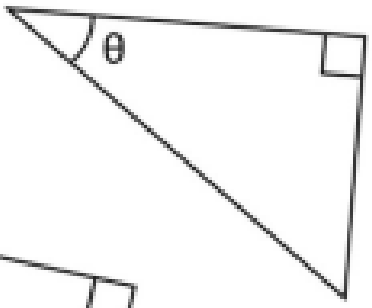
D)



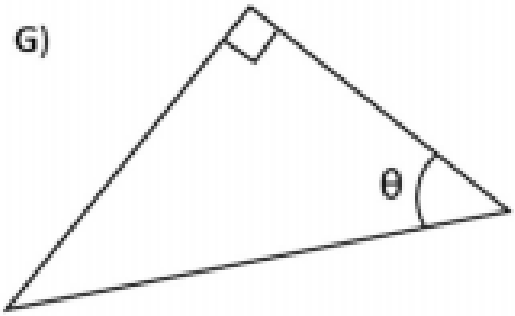
E)



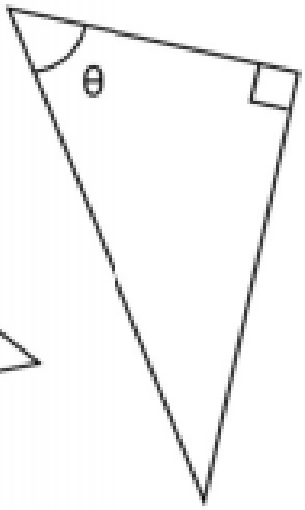
F)



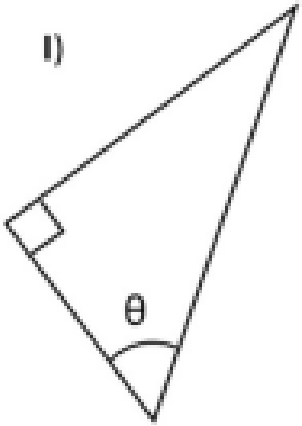
G)



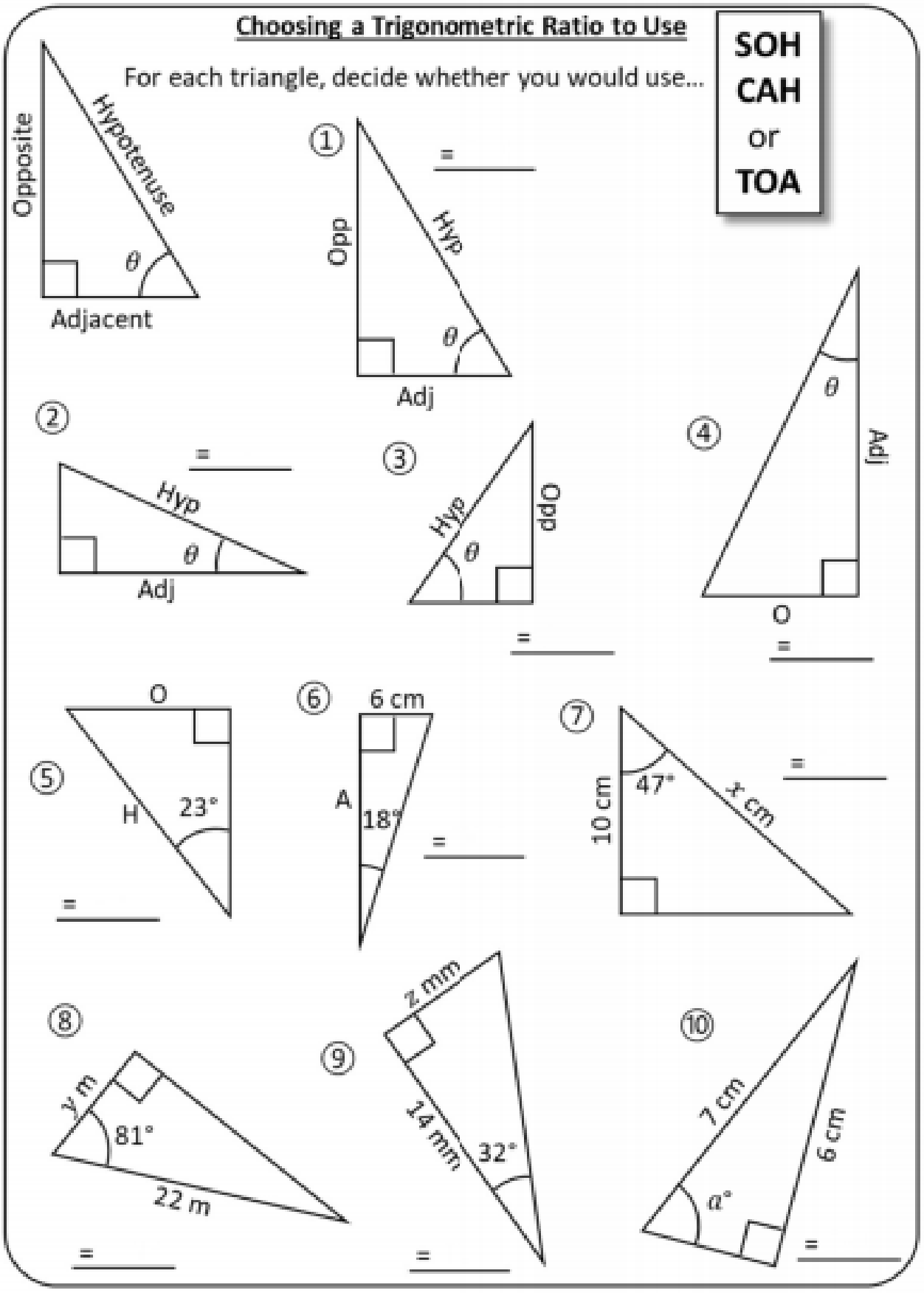
H)



I)



Task 2:

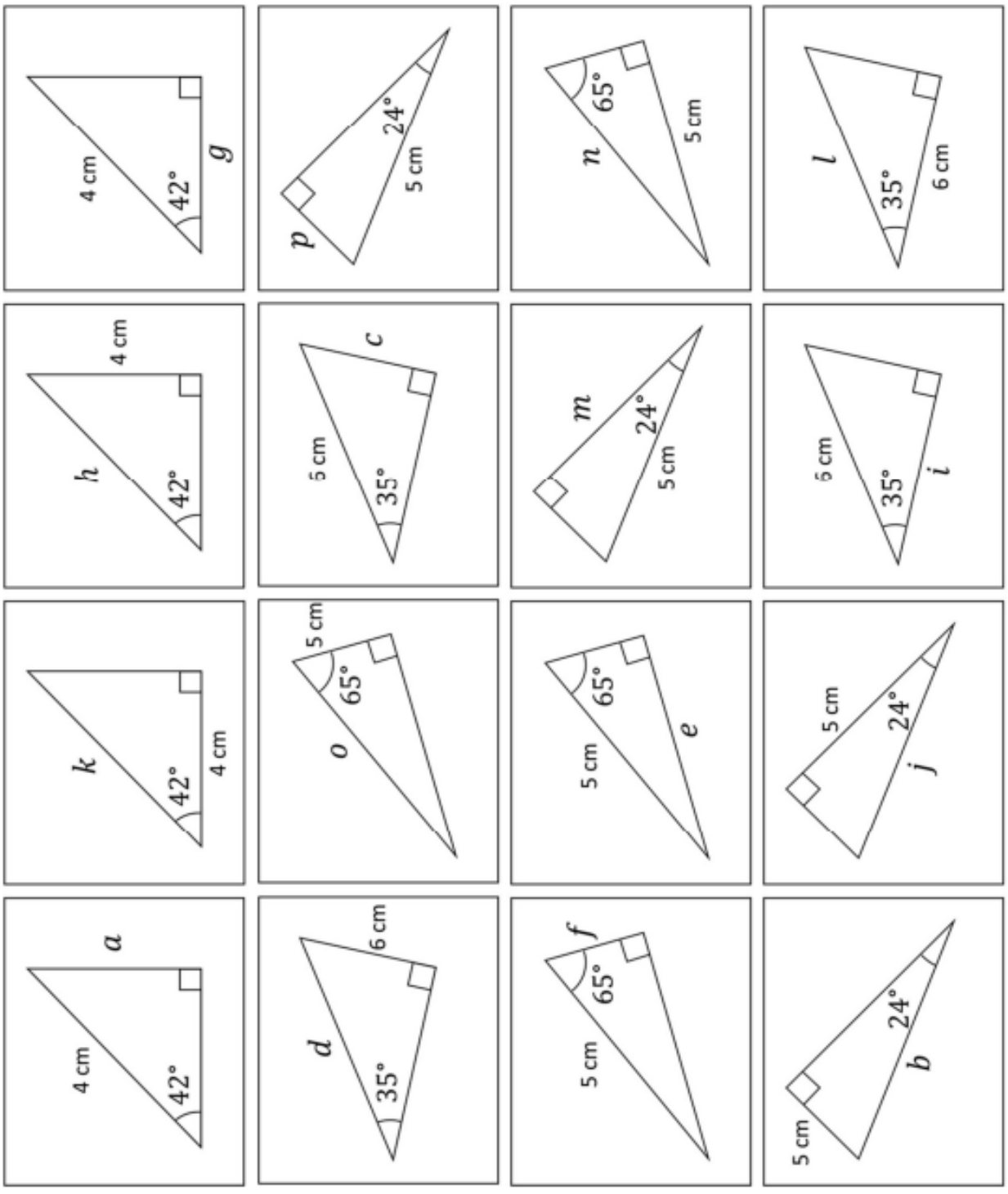

Choosing a Trigonometric Ratio to Use
For each triangle, decide whether you would use...
SOH
CAH
or
TOA
Opposite
Hypotenuse
θ
Adjacent
①
=
Opp
Hyp
θ
Adj
②
=
Hyp
θ
Adj
③
Hyp
θ
Opp
=
④
θ
Adj
O
=
⑤
O
H
23°
=
⑥
6 cm
A
18°
=
⑦
47°
x cm
10 cm
=
⑧
y m
81°
22 m
=
⑨
z mm
14 mm
32°
=
⑩
7 cm
6 cm
a°
=

Stewards Academy

Task 3: (just Sin and Cos)

Match up the length of the missing side with one of the answers on the right hand side

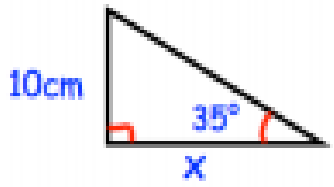
2.11	4.57	10.46	7.32	2.03	5.98	5.47	11.83	4.53	2.68	3.44	12.29	5.38	4.91	5.52	2.97



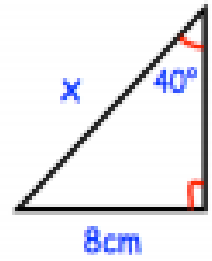
Task 4: (Sin, Cos and Tan)

Question 2: Find the lengths of the sides labelled x below.

(a)

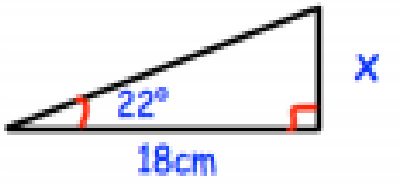


(b)

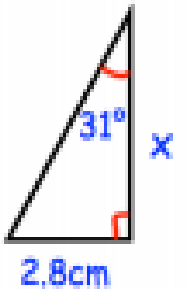


(c)

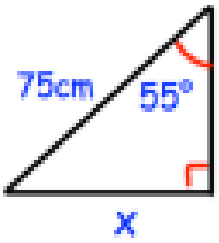
(d)



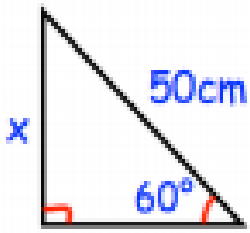
(e)



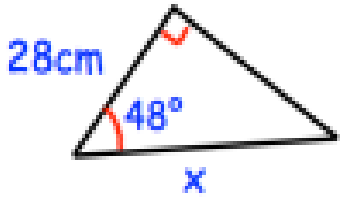
(f)



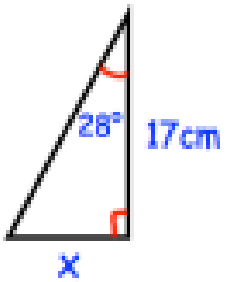
(g)



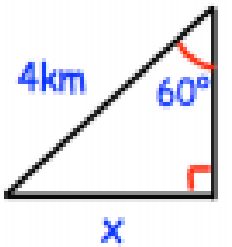
(h)



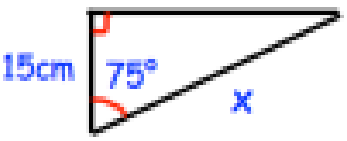
(i)



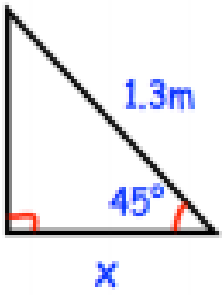
(j)



(k)

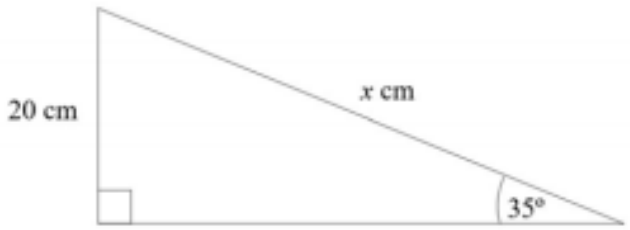


(l)



Exam Questions:

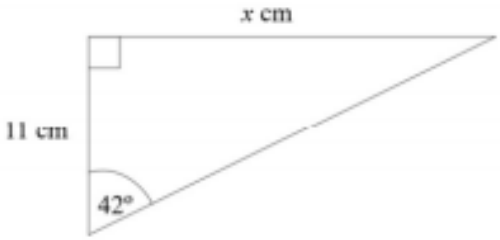
1



Work out the value of x.

(2)

2



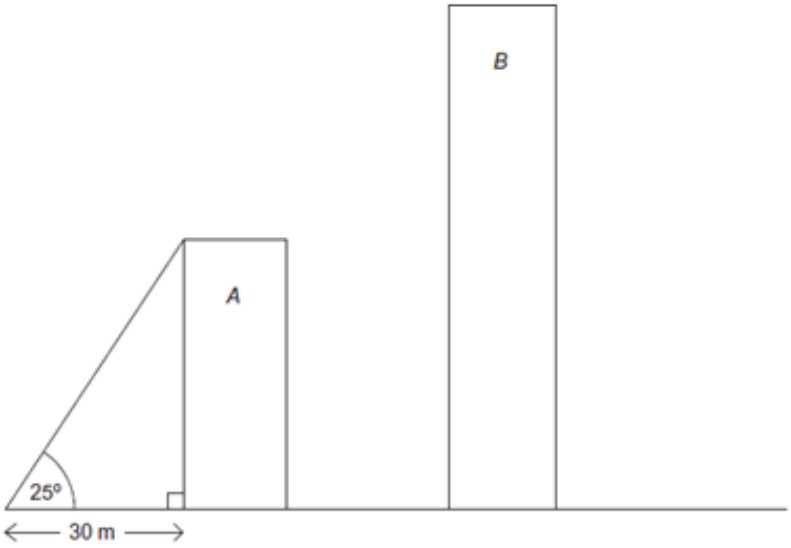
Work out the value of x.

(2)

The diagram shows two buildings, *A* and *B*.

The heights of the buildings are in the ratio 3 : 5

Not drawn accurately



Work out the height of building *B*.

Answer _____ metres

(Total 4 marks)

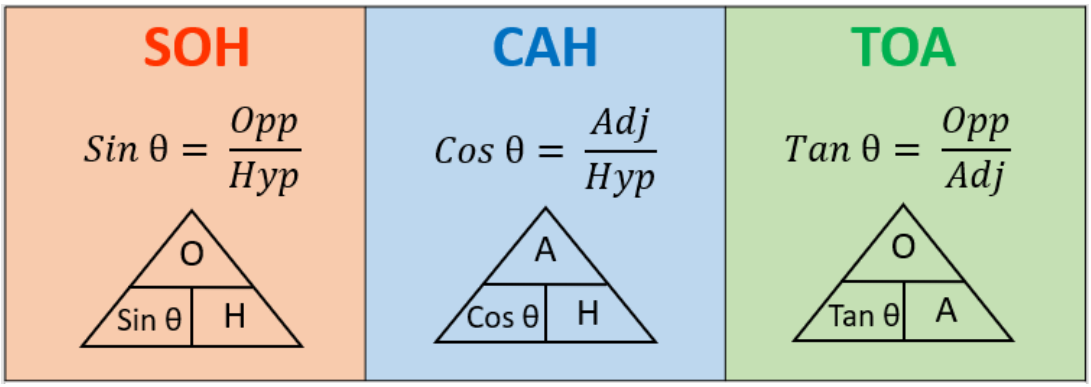
Week 5:

- **LI: I can decide which trig ratio to use to find the missing angle in a right-angled triangle**
- **LI: I can use the inverse of sin, cos or tan to find missing angles in right-angled triangles**

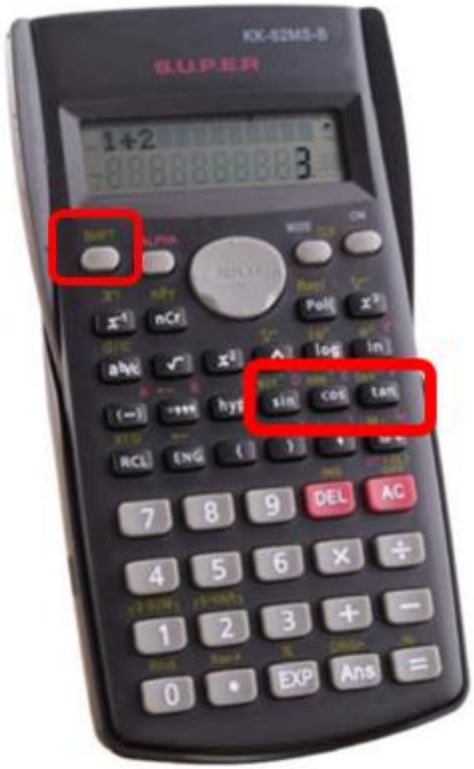
Demonstration Videos:

https://corbettmaths.com/2013/03/30/trigonometry-introduction/
https://corbettmaths.com/2013/03/30/trigonometry-missing-angles/
https://www.mathsgenie.co.uk/sohcahtoa.html

Important Information:

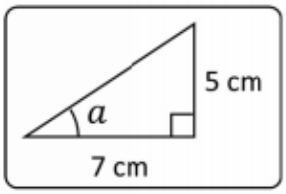


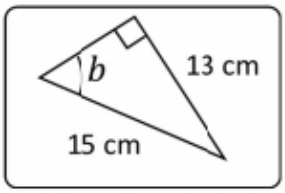
To find the missing angle you need to do the inverse of the trigonometry values on the calculator, to do this you need to first press the shift button and then press sin, cos or tan depending on which ratio you will be finding!

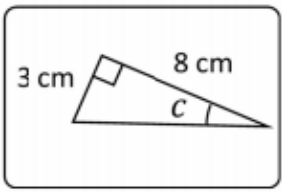


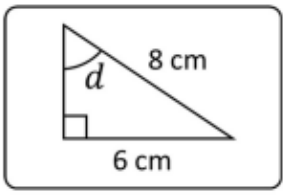
Task 1:

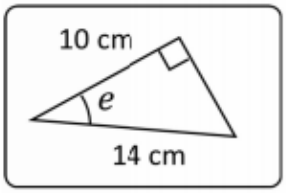
Find the missing angle using trigonometry and match it up to the answers below (the answer will be to one decimal place)

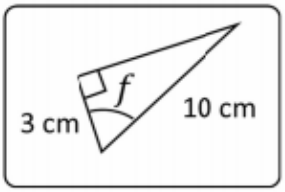


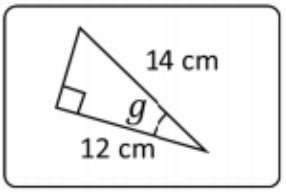


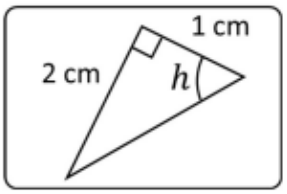


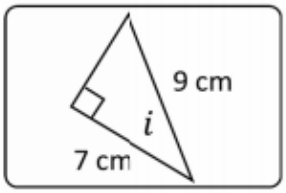


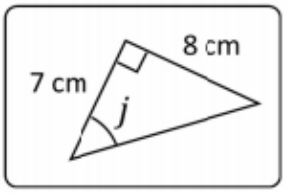


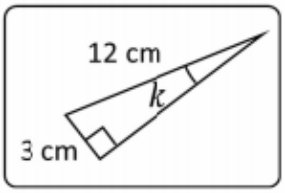


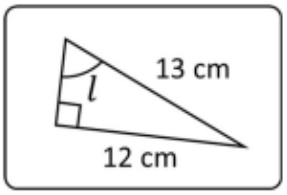










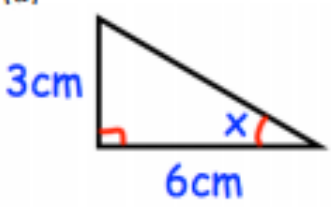


20.6°	48.8°	48.6°	44.4°
14.5°	60.1°	35.5°	63.4°
67.4°	72.5°	31.0°	38.9°

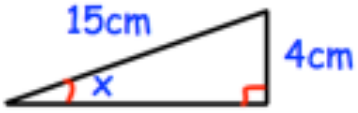
Task 2:

Question 1: Find the size of the missing angles in the triangles below.

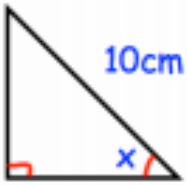
(a)



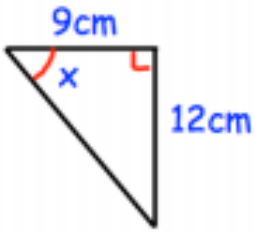
(b)



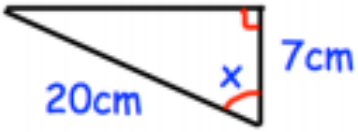
(c)



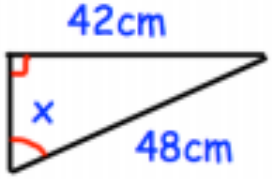
(d)



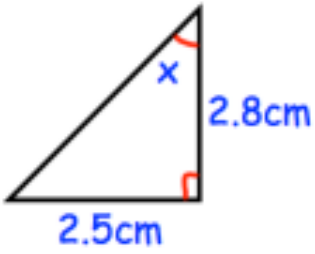
(e)



(f)

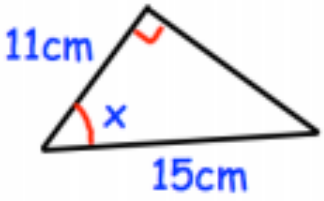


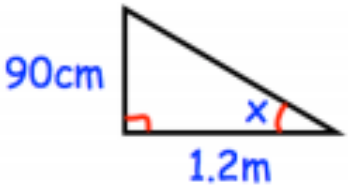
(g)



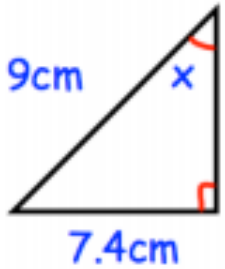
(h)

(i)

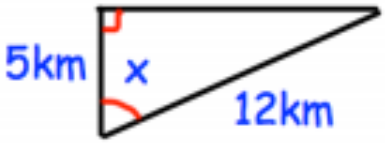




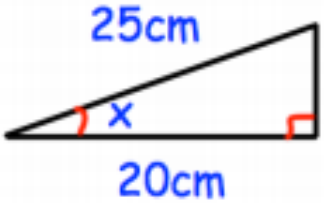
(j)



(k)



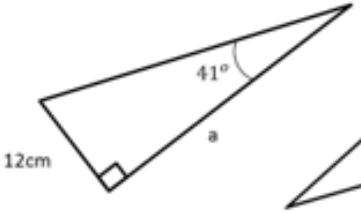
(l)

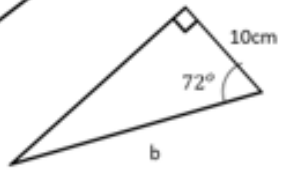


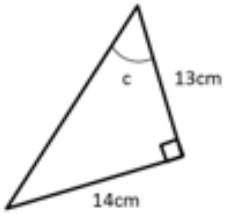
SOHCAHTOA Code Breaker

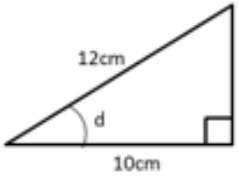
To	Pub	Obtuse	90	Why	It	Go	Shop	Because	Reflex
9	16	34	11	14	60	50	41	45	40
The	How	What	Was	Sine	Cos	Degrees	Angle	Beach	On
47	18	10	27	65	15	69	62	5	26
Not	Like	Over	30	Tan	Did	Right	Hot	Triangle	Acute
23	48	38	79	83	32	33	40	2	56

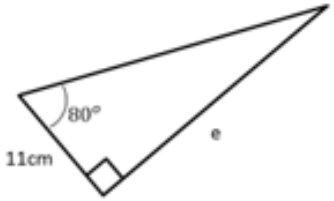
Find the missing side or angle labelled (rounded to the nearest whole number), then use the code above to translate your answer into part of the coded joke on the other side.

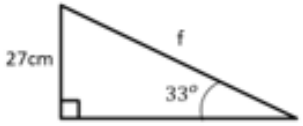


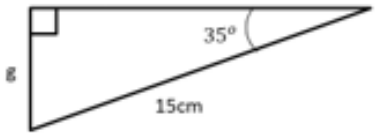


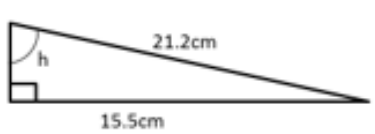


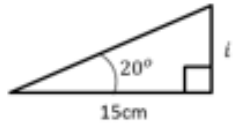


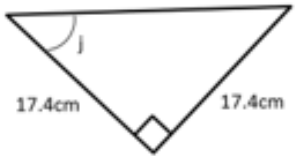


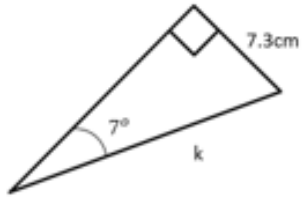


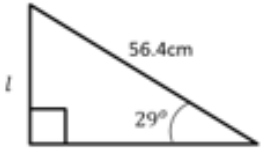


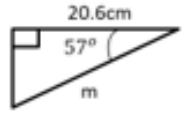


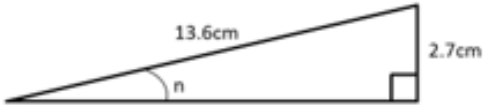












As you decode your answers, fill in the gaps below.

_____ _____ _____ _____ _____ _____

_____ _____ _____ ?

_____ _____ _____ _____ _____ _____

Task 4:

Trigonometry Codebreaker 1

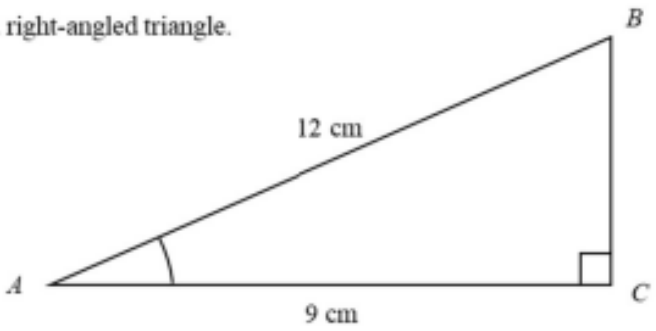
A	B	C	D	E	F	G	H	I	J	K	L	M
24	5	47	56	45	32	10	17	4	30	16	52	60

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
29	9	13	65	28	7	6	21	14	8	27	39	41

Find the value of x in each case below **giving your answers to the nearest whole number**, link your answers to the table above to reveal why I was so grateful that someone explain the meaning of the word "loads" to me:

Exam Questions:

1 ABC is a right-angled triangle.



(a) Work out the size of angle BAC.
Give your answer correct to 1 decimal place.

.....°

(2)

The length of side AB is reduced by 1 cm.
The length of side AC is still 9 cm.
Angle ACB is still 90°

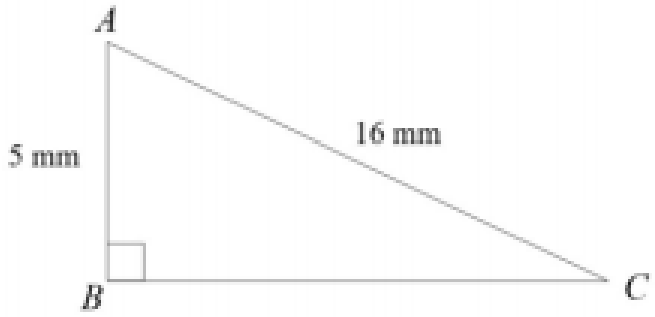
(b) Will the value of cos ABC increase or decrease?
You must give a reason for your answer.

.....

.....

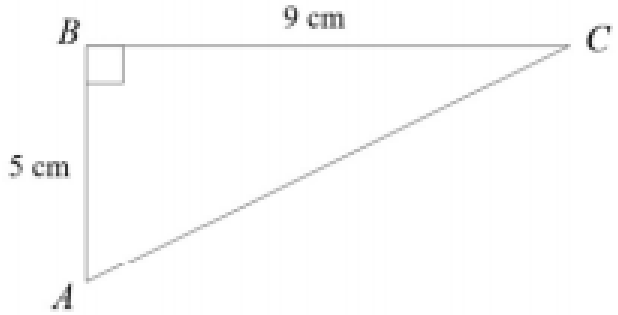
(1)

(Total for Question 1 is 3 marks)



Calculate the size of angle BAC.

(2)

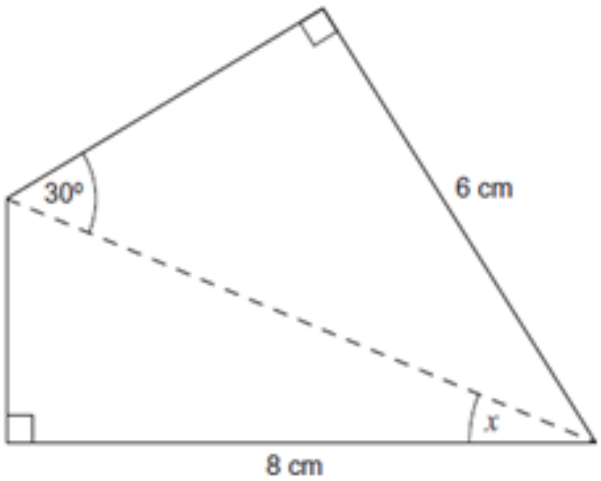


Calculate the size of angle ACB.

(2)

The diagram shows a quadrilateral.

Not drawn accurately

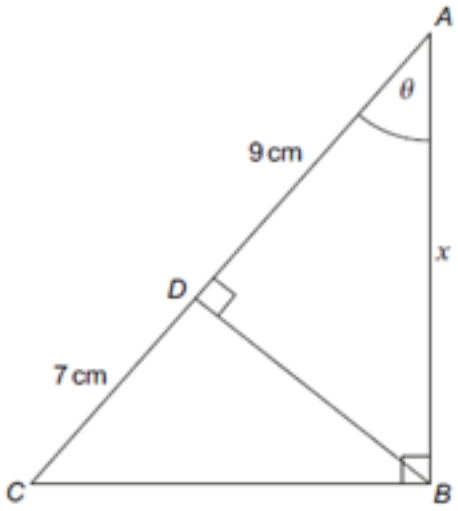


Work out the size of angle x.

Answer _____ degrees

(Total 4 marks)

ABC is a right-angled triangle.
D is a point on *AC*.
BD is perpendicular to *AC*.



Not drawn accurately

(a) Use triangle *ABC* to write cos θ in terms of x

cos θ = _____

(1)

(b) By writing another expression for cos θ in terms of x, or otherwise, work out the value of x.

x = _____ cm

(2)

(Total 3 marks)

Week 6:

- **LI: I know the exact value of sin and cos 0, 30, 45, 60 and 90 degrees**
- **LI: I can solve worded problems involving pythagoras and trigonometry**
- **LI: I can solve more complex exam style problems involving ratio and trig**

Demonstration Videos:

https://corbettmaths.com/2013/04/20/exact-trigonometric-values/
https://www.mathsgenie.co.uk/exact-trig-values.html

https://corbettmaths.com/2013/03/30/trigonometry-introduction/
https://corbettmaths.com/2013/03/30/trigonometry-missing-sides/
https://corbettmaths.com/2013/03/30/trigonometry-missing-angles/

Important Information:

You will need to learn these off by heart – use the videos to explore how to memorise them!

Exact Values of Trigonometric Functions

Angle (θ) Degrees	$0°$	$30°$	$45°$	$60°$	$90°$
$\sin(\theta)$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos(\theta)$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\tan(\theta)$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not Defined

Task 1:
Exact trigonometry values

Question 1: Write down the exact values of each of the following

(a) sin 30° (b) cos 0° (c) tan 45° (d) sin 90° (e) sin 0°

(f) cos 60° (g) tan 0° (h) sin 45° (i) cos 30° (j) tan 60°

(k) cos 90° (l) sin 60° (m) cos 45° (n) tan 30°

Question 2: Write down the exact values of each of the following

(a) cos 60° + sin 30° (b) cos 0° + tan 45° + sin 90°

(c) sin 30° + sin 90° (d) sin 45° + cos 45°

Question 3: Write down the exact values of each of the following

(a) sin 45° + cos 45° (b) tan 30° + tan 60° (c) cos 30° + sin 60°

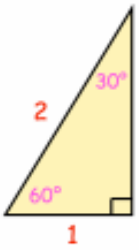
1	Write down the exact value of sin (45)	**(1 mark)**
2	Write down the exact value of cos (90°)	**(1 mark)**
3	Write down the exact value of tan (30)	**(1 mark)**
4	Write down the exact value of sin (30°)	**(1 mark)**
5	Write down the exact value of tan (45)	**(1 mark)**
6	Write down the exact value of cos (0°)	**(1 mark)**
7	Write down the exact value of sin (60)	**(1 mark)**
8	Write down the exact value of sin (0)	**(1 mark)**

Task 2:

Question 1: Using the triangle below, explain each of the following.

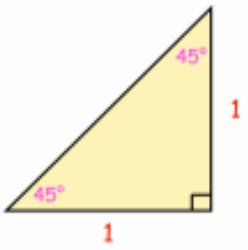
(a) $sin(30°) = \frac{1}{2}$ (b) $cos(30°) = \frac{\sqrt{3}}{2}$ (c) $tan(30°) = \frac{\sqrt{3}}{3}$

(d) $sin(60°) = \frac{\sqrt{3}}{2}$ (e) $cos(60°) = \frac{1}{2}$ (f) $tan(60°) = \sqrt{3}$



Question 2: Using the triangle below, explain each of the following.

(a) $tan(45°) = 1$ (b) $sin(45°) = \frac{\sqrt{2}}{2}$ (c) $cos(45°) = \frac{\sqrt{2}}{2}$



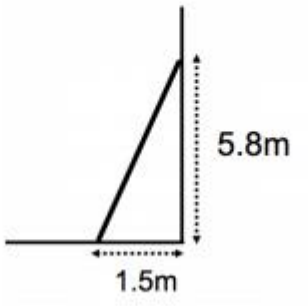
Question 3: Conor says that $cos(45°) = \frac{1}{\sqrt{2}}$

Is he correct?

Task 3:

Advanced trigonometry exam questions (also some at the end of Week 4 and 5)

5. A ladder is placed against a wall.
To be safe, it must be inclined at between 70° and 80° to the ground.



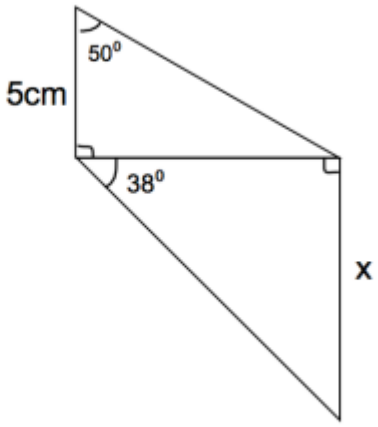
(a) Is the ladder safe?

.....

(3)

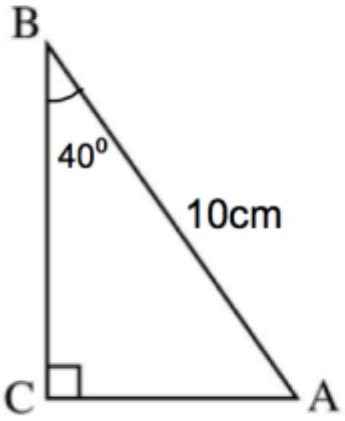
(b) Calculate the length of the ladder.

6. The diagram shows two right-angled triangles.



Calculate the value of x.

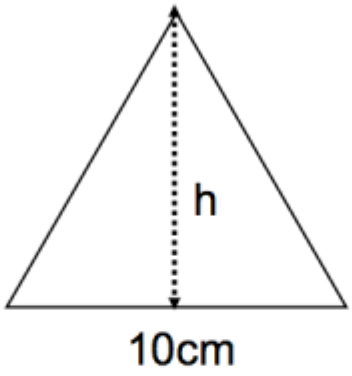
10. The diagram shows a right-angled triangle ABC. **(Non-calculator question)**



Angle	Sine	Cosine	Tangent
40°	0.643	0.766	0.839
50°	0.766	0.643	1.192

Calculate the length of BC.

12. Below is an equilateral triangle



(a) Calculate the height of the triangle.

.....cm
(3)

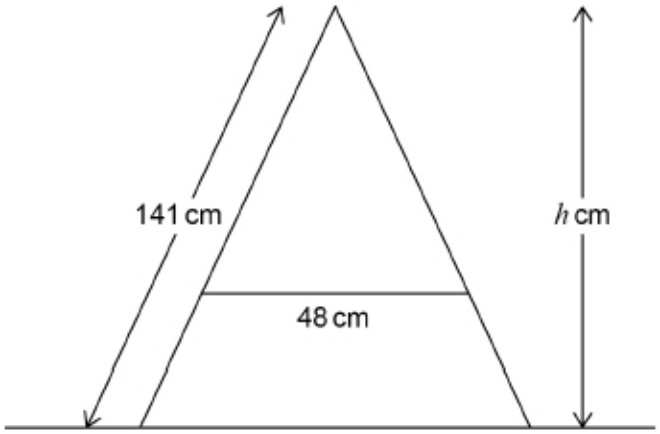
(b) Calculate the area of the triangle.

The diagram shows the side view of a step ladder with a horizontal strut of length 48 cm

The strut is one third of the way up the ladder.

The symmetrical cross section of the ladder shows two similar triangles.

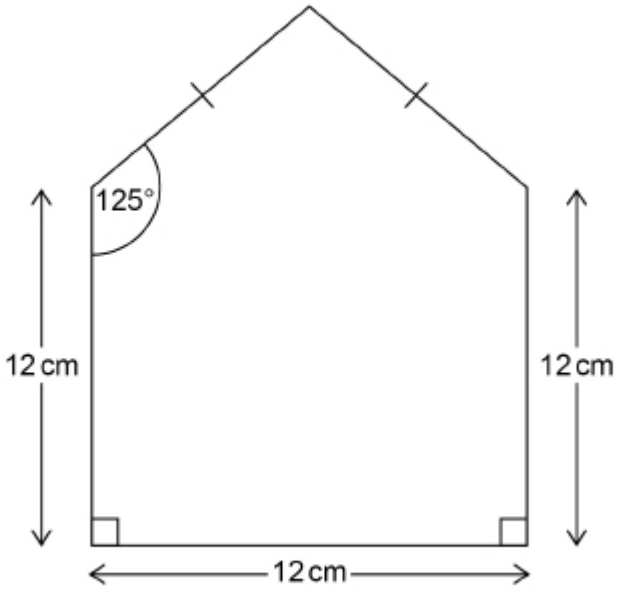
Not drawn accurately



Work out the vertical height, h cm, of the ladder.

A pentagon is made from a square and an isosceles triangle.

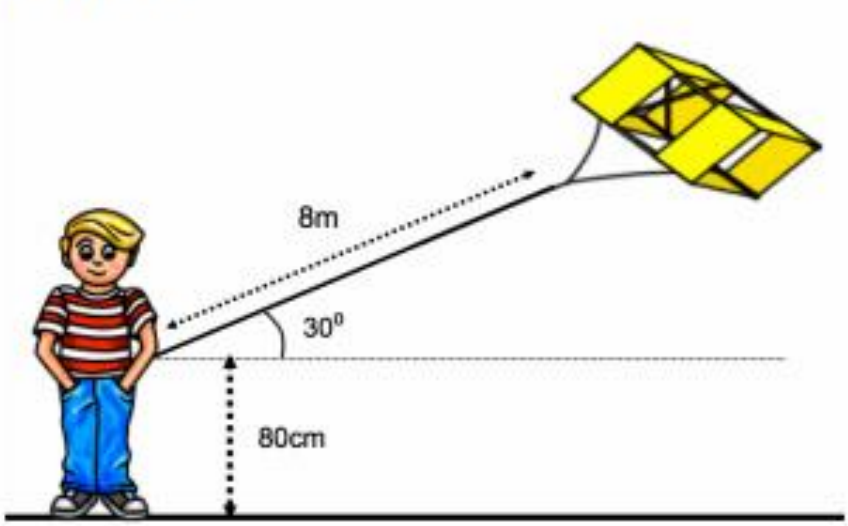
Not drawn accurately



Work out the perimeter of the pentagon.

Task 4:
Worded problems involving trigonometry exam questions

14. A boy is flying a kite.



The string is held 80cm above the ground.
The kite is on a string which is 8m long.
The string makes an angle of 30° with the horizontal.

Calculate the height of the kite above the ground.

15. A helicopter leaves Bristol and flies due east for 10 miles.
Then the helicopter flies 8 miles north before landing.

(a) Work out the direct distance of the helicopter from Bristol.

.....miles
(3)

(b) Calculate the bearing of the helicopter from Bristol.

Questions	Question Title
1	Comparing negative numbers and decimals
2	Algebraic expressions
3	Comparing fractions
4	Index form
5a	Writing algebraic expressions
5b	Simplifying algebraic expressions
6	Number bonds to 12
7a	Output from a function machine
7b	Output from a function machine for negative input
8a	Finding the mode from a bar chart
8b	Mean from a bar chart
8c	Interpreting a bar chart
8d	Interpreting a statement about a bar chart
9a	Factors of a number
9b	Simple probability of single event
10	Reversing area calculations
11	Number word problems
12	Comparing fractions, decimals and percentages
13a	Drawing a tangent to a circle
13b	Area of a circle
14a/b	Plans and elevations
15	Cube numbers
16a	Similar triangles, finding lengths
16b	Similar triangles, finding angles
17a/b	Sharing in a ratio
18	Best buys
19a	Listing outcomes
19b	Upper and lower bound calculations
20	Calculating percentages
21	Ratio problems
22a	Properties of 2D shapes
22b	Congruence
23a/b	Error intervals
24a	Angles on parallel lines, solving equations
24b	Solving equations, angles on straight lines
25a	Fractions of amounts
25b	Probability of an event not happening
26	Factorising quadratic expressions
27	Solving inequalities, integer solutions