Name:

Exam Style Questions

Congruent Triangles

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

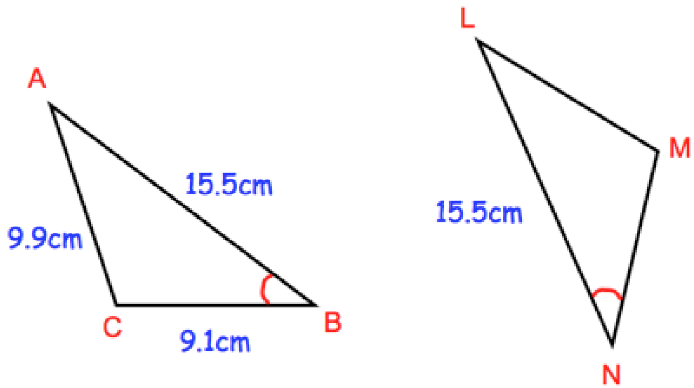
1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 67

1. ABC and LMN are congruent triangles.
Angle B = Angle N



(a) Write down the length of MN.

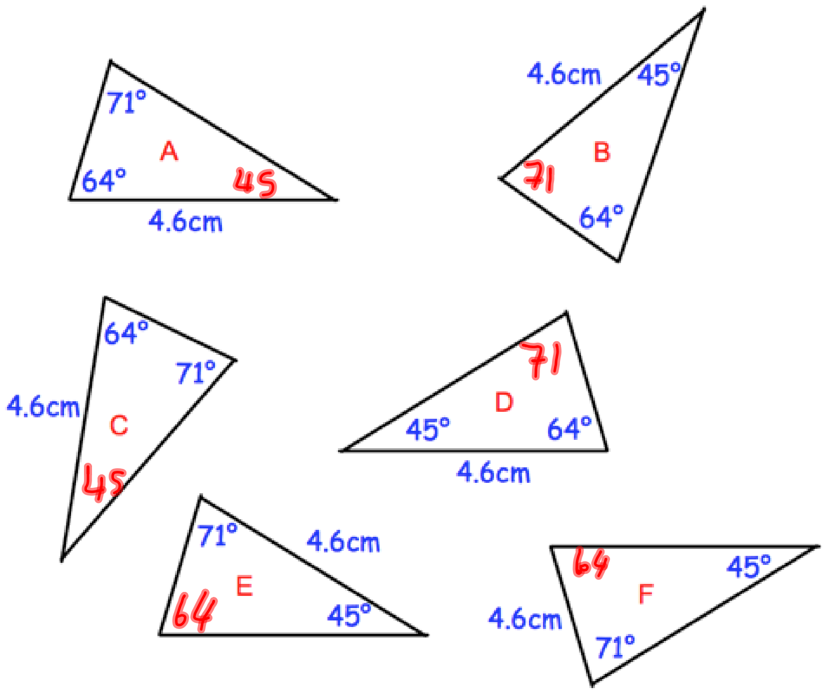
9.1cm
(1)

(b) Explain why angle A = angle L

As AB=LN and Angle B = Angle N
Then Angle A = Angle L

(2)

2. Shown below are six triangles that are not drawn accurately.



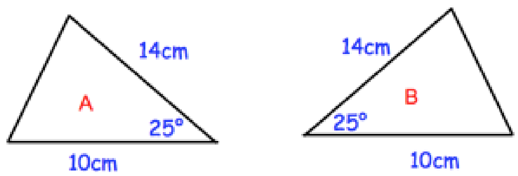
Which two triangles are congruent to triangle A?

D and C

(2)

3. For each pair below, state the condition why they are congruent.

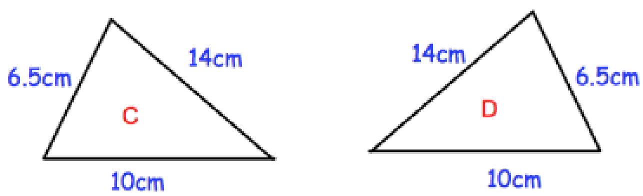
(a)



Condition: SAS

(1)

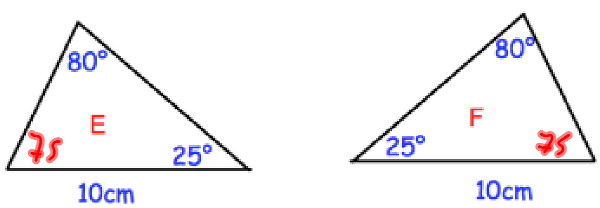
(b)



Condition: SSS

(1)

(c)



Condition: AAS

(1)

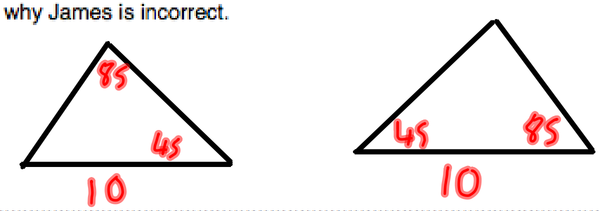
or

ASA

4. James and Chris each draw a triangle with one side of 10cm, one angle of 45° and one angle of 85°.

James says their triangles are congruent.

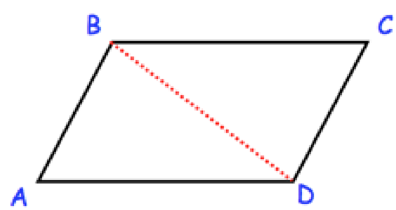
Explain why James is incorrect.



We do not know exact location of each angle. The two triangles above are not congruent

(2)

5. ABCD is a parallelogram.



Prove that triangles ABD and BCD are congruent.

BD is shared

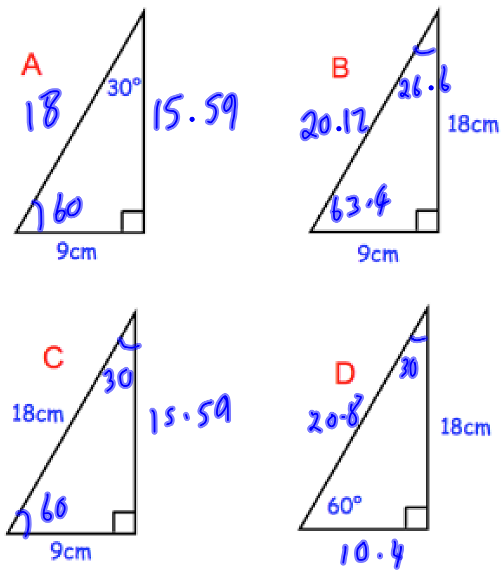
BA = CD (opposite sides of a parallelogram)

BC = AD (opposite sides of a parallelogram)

Therefore ABD and BCD are congruent due to Side, Side, Side.

(4)

6. Two of the triangles below are congruent.



Identify the two congruent triangles and explain your answer.

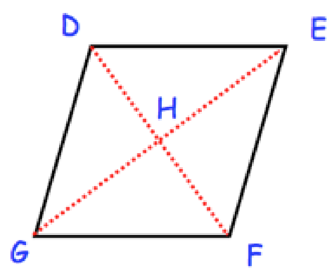
A and C

Reason: Depends on values found.

Could be SSS/SAS/RHS/ASA etc

(4)

7. The diagram shows a rhombus DEFG.
The diagonals intersect at H.



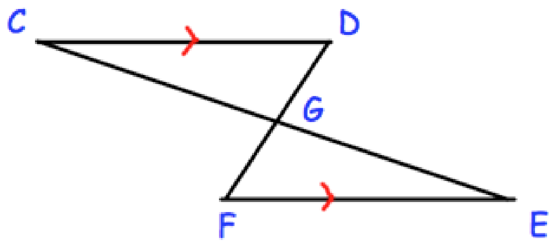
Prove triangles DGH and EFH are congruent.

DG = EF as rhombus (opposite sides)
DH = HF diagonals bisect each other
GH = EH diagonals bisect each other
DGH and EFH are congruent as SSS

(4)

8. In the diagram, the lines CE and DF intersect at G.

CD and FE are parallel and CD = FE.



Prove that triangles CDG and EFG are congruent.

CD = FE (given)

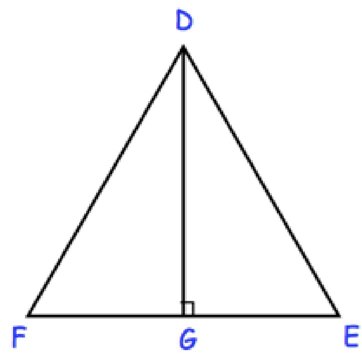
Angle DCE = FEC (alternate angles)

Angle CDF = EFD (alternate angles)

CDG and EFG are congruent as ASA

(4)

9. DEF is an equilateral triangle.



G lies on EF.
DG is perpendicular to FE.

Prove DFG is congruent to DEG.

DG is shared
DF = DE as equilateral triangle
Angle DGE = DGF = 90 degrees
Therefore congruent as RHS.

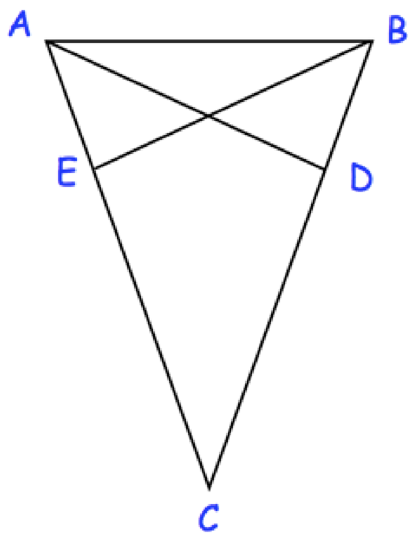
Or Angle EFD = FED = 60 degrees as equilateral triangle.
Therefore both EDG = FDG = 30 degrees
So could say SAS.

(3)

Or even AAS or ASA

Clear explanation needed

10. ABC is an isosceles triangle in which AC = BC.
D and E are points on BC and AC such that CE = CD.



Prove triangles ACD and BCE are congruent.

AC = BC (sides of an isosceles triangle)

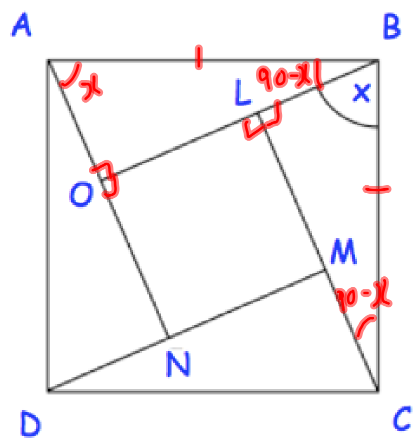
Angle ACD = BCE (shared)

CE = CD (given)

Therefore SAS.

(4)

11. ABCD and LMNO are squares.
Angle CBL = x

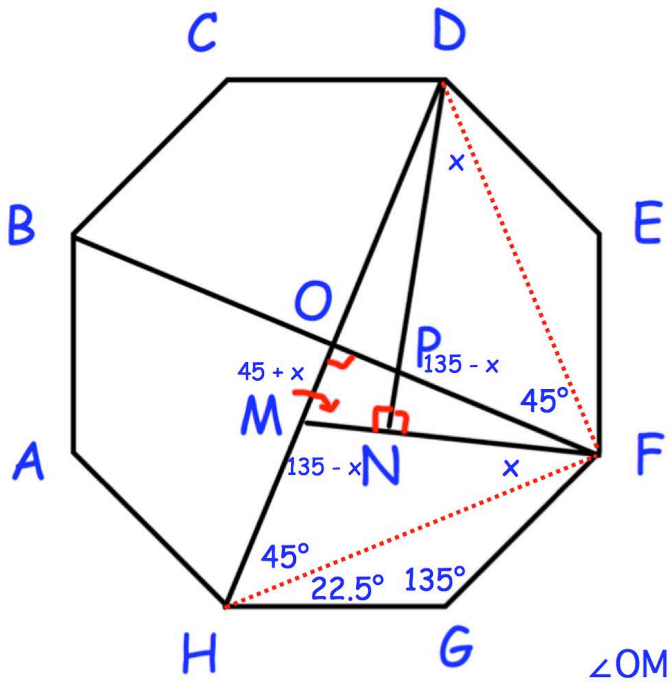


Prove that triangles ABO and CBL are congruent.

1) Angles BLC = AOB = 90 degrees as LMNO is a square.
2) Angle ABL = 90 - x as ABC is a right angle and CBL = x
3) Angle BCL = 90 - x as angles in a triangle add to 180 and Angle CBL = x and Angle BLC = 90.
4) Angle OAB = x as angles in a triangle add to 180 and Angle ABL = 90 - x and Angle AOB = 90.
5) AB = BC as a square.

Congruent as ASA.

(4)



$\angle MOF = 90°$ (BF & DH cross at right angles).

$\angle DNM = 90°$ (given in question)

$\angle MHG = 67.5°$ (half of $135°$)

$\angle FHG = 22.5°$ (Given FHG is isosceles and $\angle HGF = 135°$)

$\angle MHF = 45°$ ($\angle MHG - \angle FHG$)

Let $\angle HFM = x$

$\angle HMF = (135 - x)°$

$\angle OMF = (45 + x)°$ Angles in straight line

$\angle OPN = (135 - x)°$ Angles in a quadrilateral (OPMN)

$\angle DPF = (135 - x)°$ Vertically opposite

$\angle BFD = 45°$ (same as $\angle MHF$)

$\angle FDN = x$ (Angles in a triangle)

As regular octagon FH = DF (could consider $\triangle FGH$ & $\triangle DEF$ being SAS)

Therefore $\triangle FHM$ and $\triangle DFP$ are congruent due to ASA