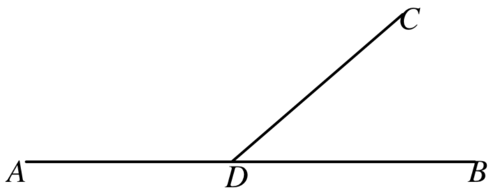
# Deductive geometry toolkit: Student worksheet

http://topdrawer.aamt.edu.au/Geometric-reasoning/Good-teaching/Writing-a-proof/Proving-Pythagoras-theorem/Geometry-toolkit

Keep this sheet as a summary of geometry reasons.
Complete the following by giving the reasons for each statement.
In each example, mark the angles mentioned in the diagram. Use the same mark if the angles are equal and a different mark if they are not equal.

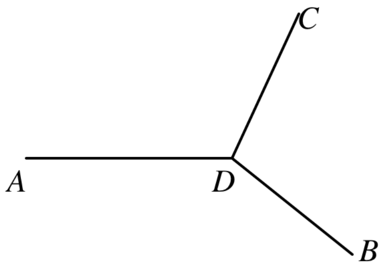
1.




$\angle ADC + \angle BDC = 180°$

( ______________________________ )

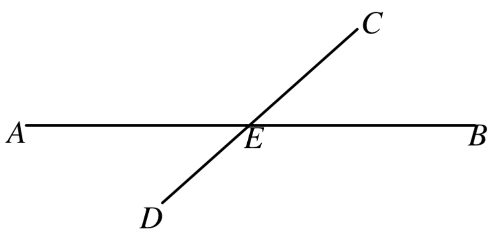
2.




$\angle ADC + \angle CDB + \angle BDA = 360°$

( ______________________________ )

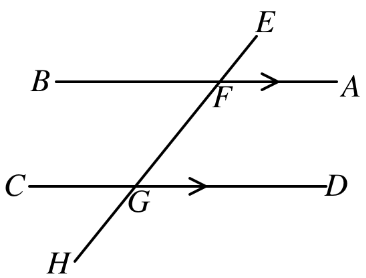
3.




$\angle AED = \angle CEB$

( ______________________________ )

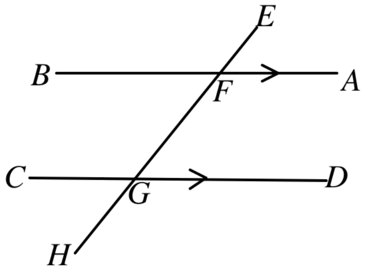
4.




$\angle AFG = \angle DGH$

( ______________________________ )

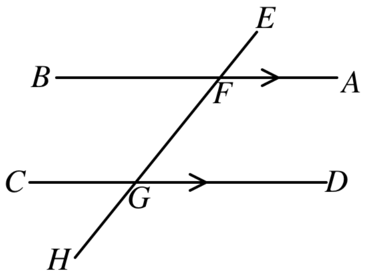
5.




$\angle BFG = \angle FGD$

( ________________________________ )

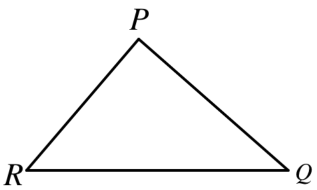
6.




$\angle BFG + \angle FGC = 180°$

( ________________________________ )

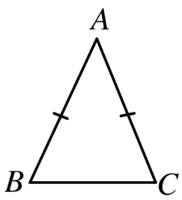
7.




$\angle P + \angle Q + \angle R = 180°$

( ________________________________ )

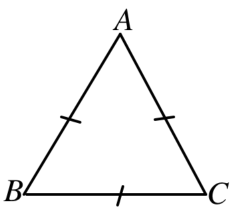
8.




$\angle B = \angle C$

( ________________________________ )

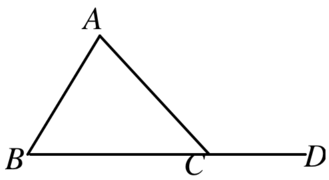
9.




$\angle A = \angle B = \angle C = 60°$

( ________________________________ )

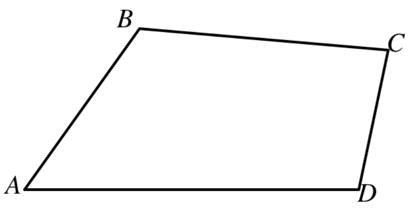
10.




$\angle ACD = \angle A + \angle B$

( ________________________________ )

11.




$\angle A + \angle B + \angle C + \angle D = 360°$

( ________________________________ )

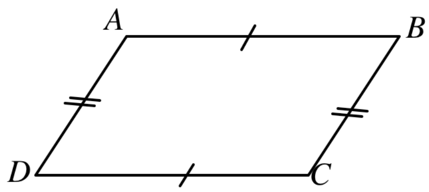
12. **Special quadrilaterals**

In addition to the reasons given so far you can use the properties of quardilaterals to give reasons for

- intervals being the same length
- lines being parallel
- angles being equal
- angles being 90°.

Below are just two examples but there are many more reasons associated with special quadrilaterals

(a)




*ABCD* is a parallelogram

(two pairs of opposite sides equal)

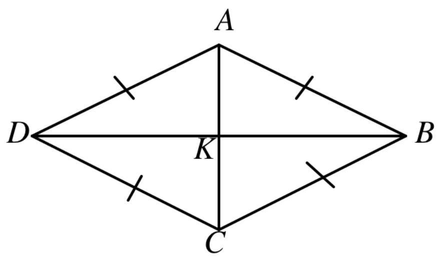
i) $AB \parallel DC$

( ________________________________ )

ii) $\angle B = \angle D$

( ________________________________ )

(b)




*ABCD* is a rhombus

i) $\angle BAK = \angle KAD$

( ________________________________ )

ii) $\angle BKA = 90°$

( ________________________________ )

iii) $BK = KD$

( ________________________________ )