



EXAM PAPERS PRACTICE

GCSE OCR Math J560
Congruent Triangles

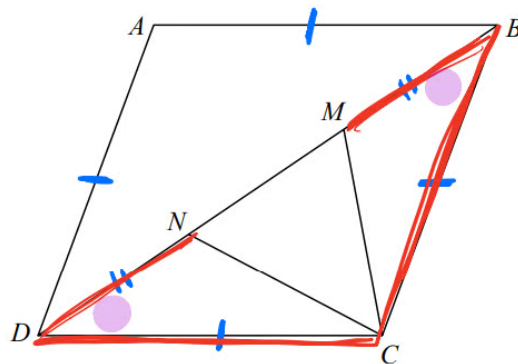
Answers

*"We will help you to
achieve A Star "*



Answer 1

$ABCD$ is a rhombus.



M and N are points on BD such that $DN = MB$.

Prove that triangle DNC is congruent to triangle BMC .

$DC = BC$ (RHOMBUS)

$DN = BM$ (GIVEN IN QUESTION)

$\hat{NDC} = \hat{MCB}$ (BASE ANGLES OF ISOSCELES Δ)

SAS. THEREFORE CONGRUENT.

CONGRUENT TRIANGLES

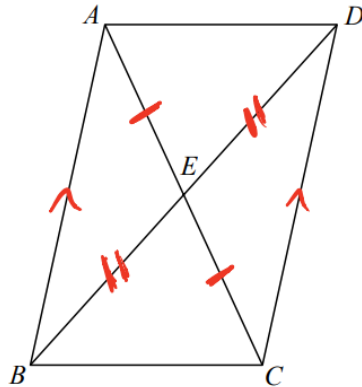
NEED TO USE ONE OF THE "STANDARD" TESTS: IE SHOW THAT THREE PARTICULAR THINGS ARE THE SAME IN THE TWO TRIANGLES:

- ① SAS
- ② ASA
- ③ AAS
- ④ SSS
- ⑤ RHS



Answer 2

$ABCD$ is a parallelogram.



E is the point where the diagonals AC and BD meet.

Prove that triangle ABE is congruent to triangle CDE .

- OPPOSITE SIDES OF PARALLELOGRAM ARE EQUAL

$$\text{SO } AB = DC *$$

- DIAGONALS OF PARALLELOGRAM BISECT EACH OTHER

$$\text{SO } AE = EC *$$

$$\text{AND } BE = ED *$$

- * SO SSS AND TRIANGLES ABE AND CDE ARE CONGRUENT

CONGRUENT TRIANGLES

NEED TO USE ONE OF THE "STANDARD" TESTS: IE SHOW THAT THREE PARTICULAR THINGS ARE THE SAME IN THE TWO TRIANGLES:

① SAS

② ASA

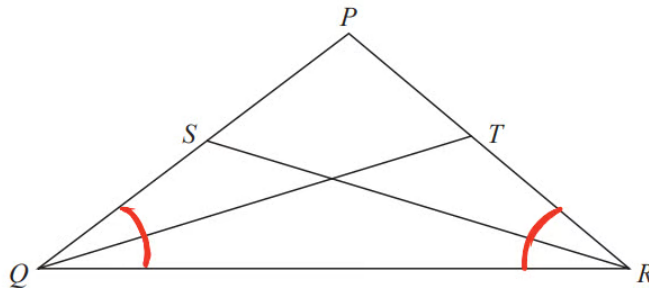
③ AAS

④ SSS

⑤ RHS



Answer 3



$PQ = PR$. \rightarrow $\triangle PQR$ is ISOSCELES
 S is the midpoint of PQ .
 T is the midpoint of PR .

Prove triangle QTR is congruent to triangle RSQ .

QR is common to both \triangle s
 $\hat{SQR} = \hat{TRQ}$ ($\triangle PQR$ is ISOSCELES)
 $SQ = TR$ (As $PQ = PR$)

SO WE HAVE SAS. BEING
EQUAL AND SO THE
TRIANGLES ARE CONGRUENT.

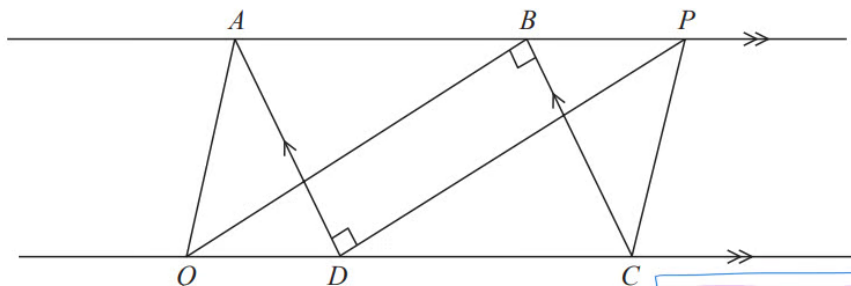
CONGRUENT TRIANGLES

NEED TO USE ONE OF
THE "STANDARD" TESTS:
IE SHOW THAT THREE
PARTICULAR THINGS ARE
THE SAME IN THE
TWO TRIANGLES:

- ① SAS
- ② ASA
- ③ AAS
- ④ SSS
- ⑤ RHS



Answer 4



$ABCD$ is a parallelogram.
 ABP and QDC are straight lines.
Angle $ADP = \text{angle } CBQ = 90^\circ$

(a) Prove that triangle ADP is congruent to triangle CBQ .

$$\hat{QBC} = \hat{PDA} \quad (\text{BOTH } 90^\circ, \text{ AS GIVEN})$$

$$AD = CB \quad (\text{OPP SIDES IN A PARALLELOGRAM ARE EQUAL})$$

$$\hat{BAD} = \hat{DCB} \quad (\text{OPP ANGLES IN A PARALLELOGRAM ARE EQUAL})$$

SO WE HAVE ASA, AND SO $\triangle ADP$ IS CONGRUENT TO $\triangle CBQ$.

CONGRUENT TRIANGLES

NEED TO USE ONE OF THE "STANDARD" TESTS: IE SHOW THAT THREE PARTICULAR THINGS ARE THE SAME IN THE TWO TRIANGLES:

- ① SAS
- ② ASA
- ③ AAS
- ④ SSS
- ⑤ RHS



Answer 5

CIRCLE THEOREMS

ANGLE IN A SEMICIRCLE IS 90°

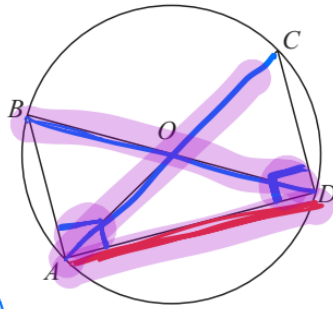


Diagram NOT accurately drawn

AOC and BOD are diameters of a circle, centre O .

Prove that triangle ABD and triangle DCA are congruent.

$$\hat{BAD} = \hat{CDA} = 90^\circ$$

(ANGLE IN A SEMICIRCLE)

$$AC = BD \text{ (BOTH DIAMETERS)}$$

AD IS COMMON TO BOTH TRIANGLES SO I HAVE SHOWN RHS AND THE TRIANGLES ARE CONGRUENT.

CONGRUENT TRIANGLES

NEED TO USE ONE OF THE "STANDARD" TESTS: IE SHOW THAT THREE PARTICULAR THINGS ARE THE SAME IN THE TWO TRIANGLES:

① SAS



② ASA



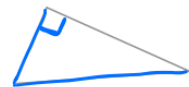
③ AAS



④ SSS



⑤ RHS





Answer 6

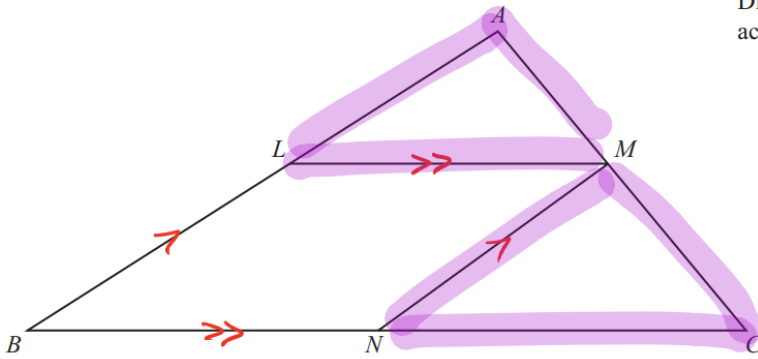


Diagram NOT accurately drawn

The diagram shows a triangle ABC .

$LMNB$ is a parallelogram where
 L is the midpoint of AB ,
 M is the midpoint of AC ,
and N is the midpoint of BC .

Prove that triangle ALM and triangle MNC are congruent.
You must give reasons for each stage of your proof.

$$MN = BL \text{ (OPP SIDES IN A } \parallel \text{ogram)}$$

$$BL = LA \text{ (L MIDPT OF BA)}$$

$$\text{SO } \underline{MN = LA}$$

$$LM = BN \text{ (OPP SIDES IN A } \parallel \text{ogram)}$$

$$BN = NC \text{ (N MIDPT OF BC)}$$

$$\text{SO } \underline{LM = NC}$$

$$\underline{AM = MC} \text{ (M MIDPT OF AC)}$$

SO SSS so Δ s ALM AND MNC ARE CONGRUENT

CONGRUENT TRIANGLES

NEED TO USE ONE OF THE "STANDARD" TESTS: IE SHOW THAT THREE PARTICULAR THINGS ARE THE SAME IN THE TWO TRIANGLES:

- ① SAS
- ② ASA
- ③ AAS
- ④ SSS
- ⑤ RHS



Answer 7

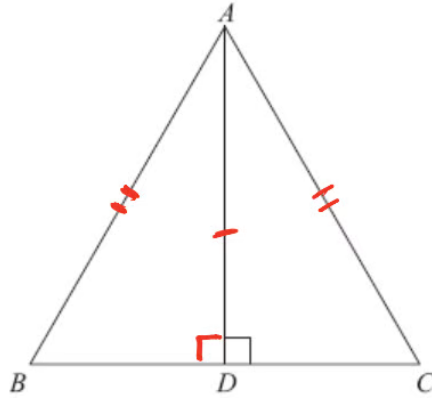


Diagram NOT accurately drawn

ABC is an equilateral triangle.
 D lies on BC .
 AD is perpendicular to BC .

(a) Prove that triangle ADC is congruent to triangle ADB .

AD is common
 $AB = AC$ (ABC is equilateral)
 $\hat{ADC} = \hat{ADB} = 90^\circ$ (given)

so RHS so Δ s ADC and ADB are congruent

CONGRUENT TRIANGLES
NEED TO USE ONE OF THE "STANDARD" TESTS:
IE SHOW THAT THREE PARTICULAR THINGS ARE THE SAME IN THE TWO TRIANGLES:

① SAS	
② ASA	
③ AAS	
④ SSS	
⑤ RHS	



Answer 8

(b) Hence, prove that $BD = \frac{1}{2}AB$.

$$BD = DC \quad \text{so} \quad BD = \frac{1}{2}BC$$

$$\text{But } AB = BC \quad \text{so} \quad \underline{\underline{BD = \frac{1}{2}AB}}$$



EXAM PAPERS PRACTICE

Answer 11