MATHS

BOOKS - NCERT MATHS (HINGLISH)

Areas of Parallelograms and Triangles

Areas Of Parallelograms And Triangles

1. The median of a triangle divides it into two

A. triangles of equal area

B. congruent triangles

C. right angled triangles

D. isosceles triangles

Answer: A

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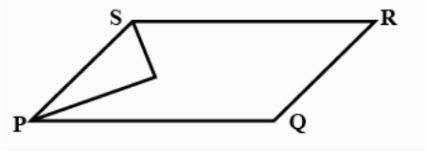
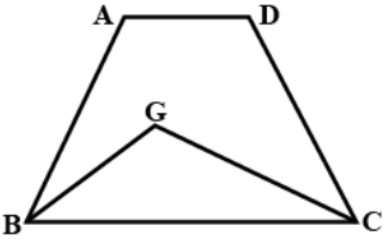
2. In which of the following figures, you find two polygons on the same base and between the same parallels?

A.

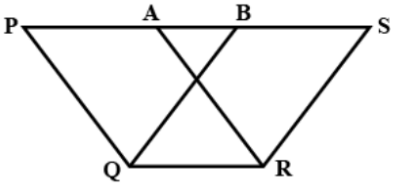


B.



C.

D.



Answer: D

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3. The figure obtained by joining the mid-points of the adjacent sides of a rectangle of sides 8 cm and 6 cm, is

A. a rectangle of area $24cm^2$

B. a square of area $25cm^2$

C. a trapezium of area $24cm^2$

D. a rhombus of area $24cm^2$

Answer: C

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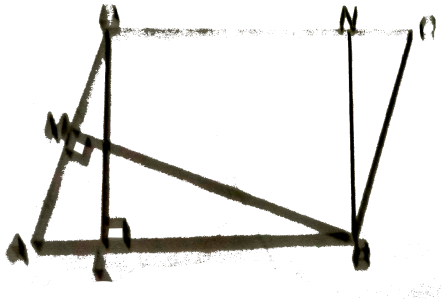
4. In the figure, the area of parallelogram ABCD is



A. $AB \times BM$

B. $BC \times BN$

C. $DC \times DL$

D. $AD \times DL$

Answer: C

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5. In figure, if parallelogram ABCD and rectangle ABEM are of equal area, then

A. perimeter of ABCD = perimeter of ABEM

B. perimeter of $ABCD <$ perimeter of ABEM

C. perimeter of $ABCD >$ perimeter of ABEM

D. perimeter of $ABCD = \frac{1}{2}$ (perimeter of ABEM)

Answer: C

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6. The mid-point of the sides of triangle along with any of the vertices as the fourth point make a parallelogram of area equal to

A. $\frac{1}{2}ar(ABC)$

B. $\frac{1}{3}ar(ABC)$

C. $2ar(ABC)$

D. $ar(ABC)$

Answer: A

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7. Two parallelograms are on equal bases and between the same parallels.

The ratio of their areas is

A. $1:2$

B. $1:1$

C. $2:1$

D. $3:1$

Answer: B

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8. ABCD is a quadrilateral whose diagnonal AC divides it into two parts, equal in are, then ABCD

A. is a rectangle

B. is always is rhombus

C. is a parallelogram

D. need not be any of (a), (b) or (c)

Answer: C

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9. If a triangle and a parallelogram are on the same base and between same parallels, then

the ratio of the area of the triangle to the area of parallelogram is

A. $1:3$

B. $2:1$

C. $3:1$

D. $1:4$

Answer: B

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10. In a trapezium ABCD, AB || DC, AB = a cm, and DC = b cm. If M and N are the midpoints of the nonparallel sides, AD and BC respectively then find the ratio of ar(DCNM) and ar(MNBA).

A. $a : b$

B. $(3a + b) : (a + 3b)$

C. $(a + 3b) : (3a + b)$

D. $(2a + b) : (3a + b)$

Answer: B

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11. ABCD is a parallelogram and X is the mid-point of AB. $(AXCD) = 24cm^2$, then $ar(ABC) = 24cm^2$.

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12. PQRS is a rectangle inscribed in a quadrant of a circle of radius 13 cm and A is any point on PQ. If PS = 5 cm, then ar $(\Delta PAS) =$.

A. $32.5cm^2$

B. $30cm^2$

C. $35cm^2$

D. $12.5cm^2$

Answer: D

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13. PQRS is a parallelogram whose area is $180cm^2$ and A is any point on the diagonal QS. The area of ΔASR?

A. Equal to $90cm^2$

B. Greater than $90cm^2$

C. Less than $90cm^2$

D. None of these

Answer: C

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14. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Then, $ar(\Delta BDE) = \frac{1}{2}ar(\Delta ABC)$.

A. True

B. False

C. Partially true

D. None of these

Answer: A

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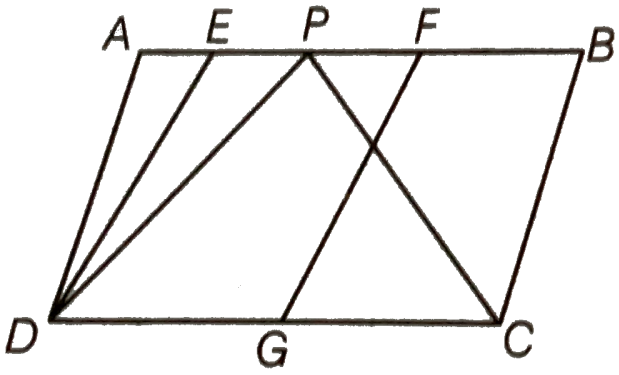
15. In the figure, ABCD and EFGD are two parallelograms and G is the mid-point of CD.

Then, $ar(\Delta DPC) = ar(EFGD)$.



A. True

B. False

C. Partially true

D. None of these

Answer: A

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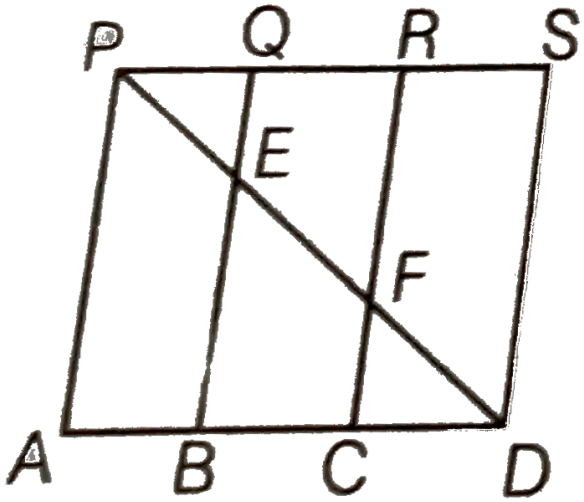
16. In the figure, PSDA is a parallelogram. Points Q and R are taken on PS such that $PQ = QR = RS$ and $PA||QB||RC$. Prove that $ar(PQE) = ar(CFD)$.



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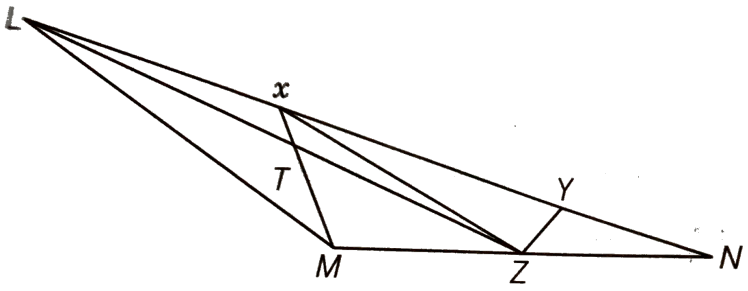
17. X and Y are points on the side LN of the triangle LMN such that LX = XY = YN. Through X, a line is drawn parallel to LM to meet MN at Z (see figure). Prove that $ar(\Delta LZY) = ar(MZYX)$.



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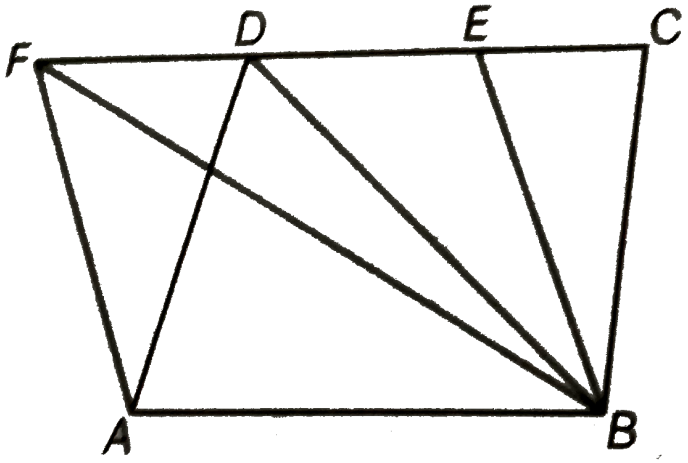
18. The area of the parallelogram ABCD is $90CM^2$. Find

(i) ar (ABEF) (ii) ar (ΔABD)

(iii) ar (ΔBEF)



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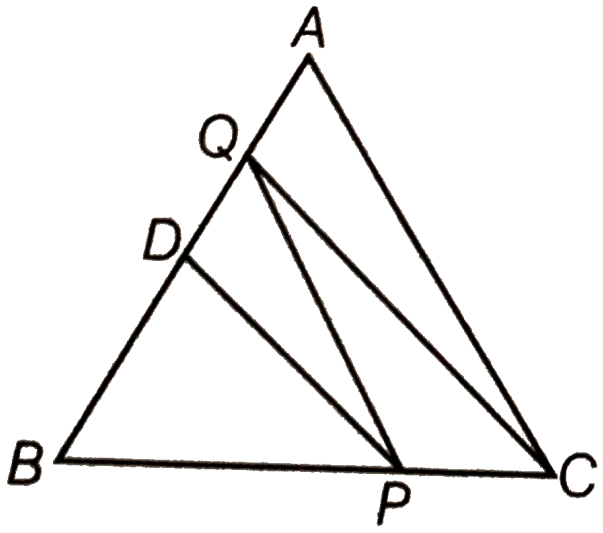
19. In Δ ABC, D is the mid-point of AB and P is any point on BC. If $CQ \parallel PD$ meets AB and Q (shown in figure), then prove that $ar(\Delta BPQ) = \frac{1}{2} ar(\Delta ABC)$.



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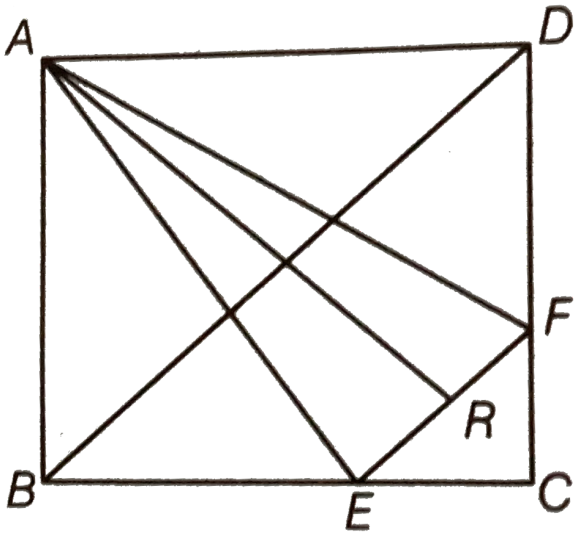
20. ABCD is a square. E and F are respectively the mid-points of BC and CD. If R is the mid-point of EF, prove that $ar(\Delta AER) = ar(\Delta AFR)$.



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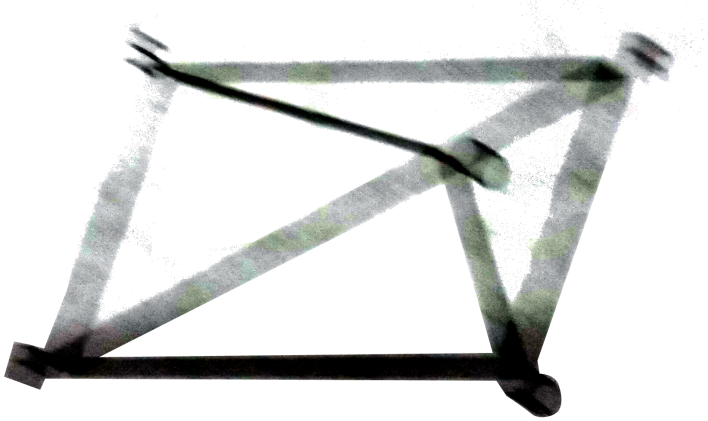
21. O is any point on the diagonal PR of a parallelogram PQRS (figure). Prove that $ar(\Delta PSO) = ar(\Delta PQO)$.



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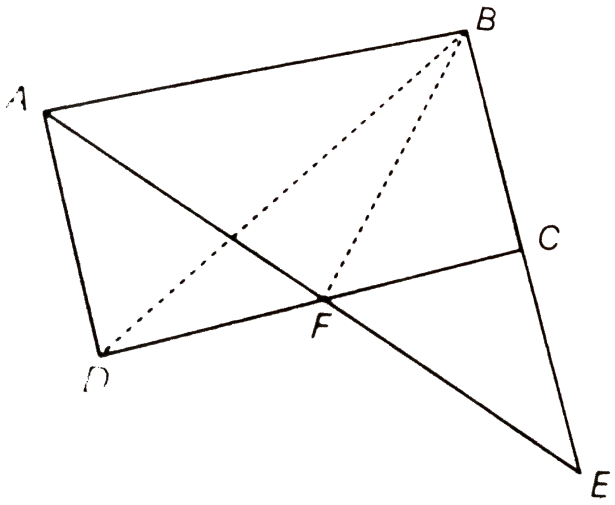
22. ABCD is a parallelogram in which BC is produced to E such that CE = BC. AE intersects

CD at F.



If $ar(\Delta DFB) = 3cm^2$, then find the area of the parallelogram ABCD.

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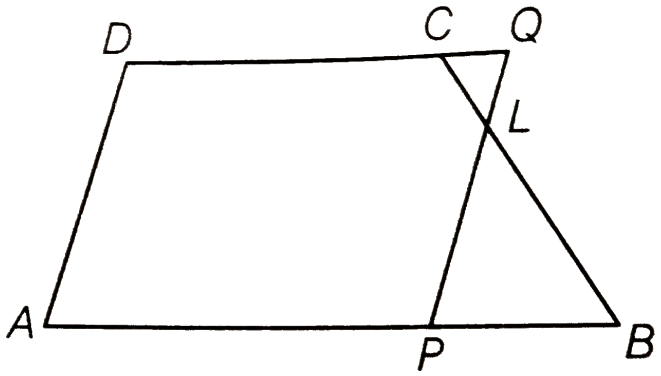
23. In trapezium ABCD, $AB \| DC$ and L is the mid-point of BC. Through L, a line

$PQ \| \| AD$ has been drawn which meets AB in P and DC produced in Q. Prove that ar (ABCD) = ar (APQD).



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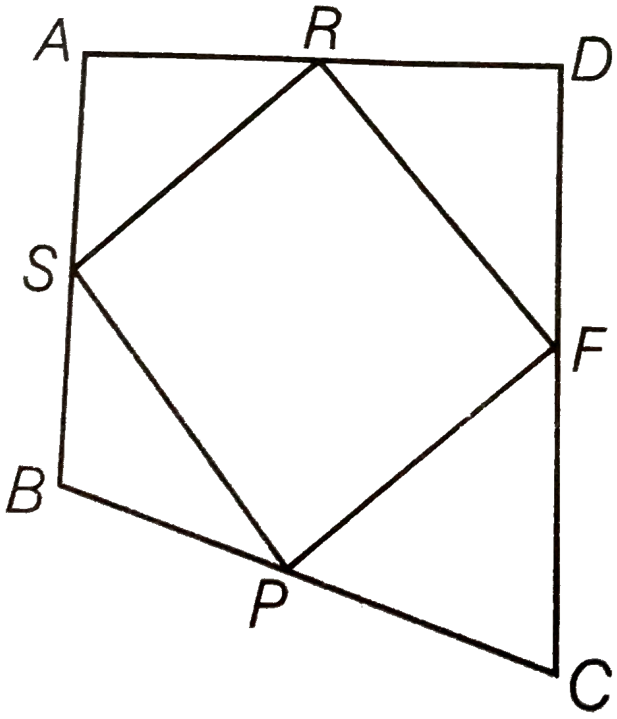
24. If the mid-points of the sides of a quadrilateral are joined in order, prove that

the area of the parallelogram, so formed will be half of the area of the given quadrilateral (figure).



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25. A point E is taken on the side BC of a parallelogram ABCD. AE and DC are produced to meet at F. Prove that $ar(\Delta ADF) = ar(ABFC)$.

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26. The diagonals of a parallelogram ABCD intersect at a point O. Through O, a line a drawn to intersect AD at P and BC at Q. Show

that PQ divides the parallelogram into two parts of equal area.

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27. The median BE and CF of a triangle ABC intersect at G. Prove that the area of $\Delta GBC =$ area of the quadrilateral AFGE.

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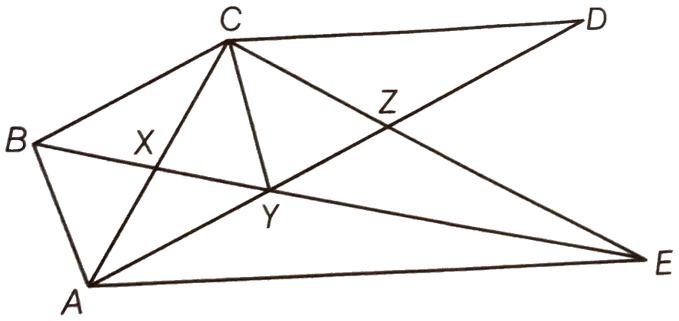
28. In figure, $CD \mid\mid AE$ and $CY \mid\mid BA$. Prove that $ar(\Delta CBX) = ar(\Delta AXY)$.



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29. ABCD is trapezium in which $AB \mid\mid DC$, DC = 30 cm and AB = 50 cm. If X and Y are, respectively the mid-points of AD and BC,

prove that

$ar(DCYX) = \frac{7}{9} ar(XYBA).$

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30. In ΔABC , if L and M are the points on AB and AC, respectively such that $LM \mid\mid BC$. Prove that $ar(\Delta LOB) = ar(\Delta MOC)$.

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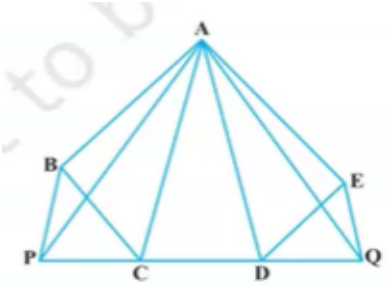
31. In figure, ABCDE is any pentagon. BP drawn parallel to AC meets DC produced at P and EQ drawn parallel to AD meets CD produced at Q. Prove that $ar(ABCDE) = ar(\Delta APQ)$.



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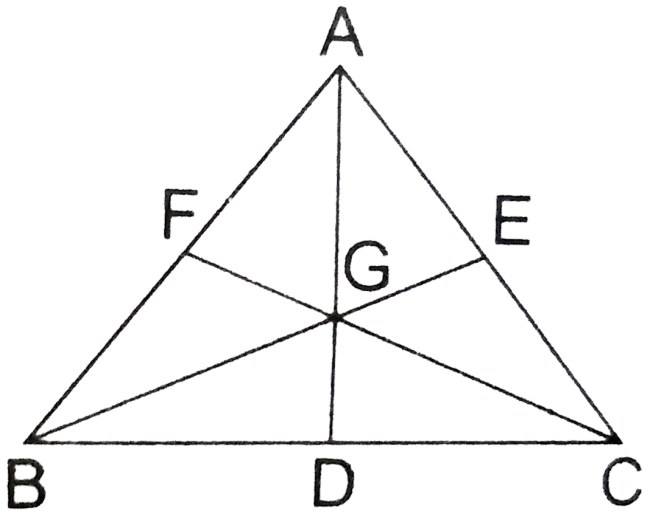
32. If the medians of a $\triangle$ ABC intersect at G, show that

$ar(\triangle AGB) = ar(\triangle AGC) = ar(\triangle BGC)$

$= \frac{1}{3} ar(\triangle ABC).$



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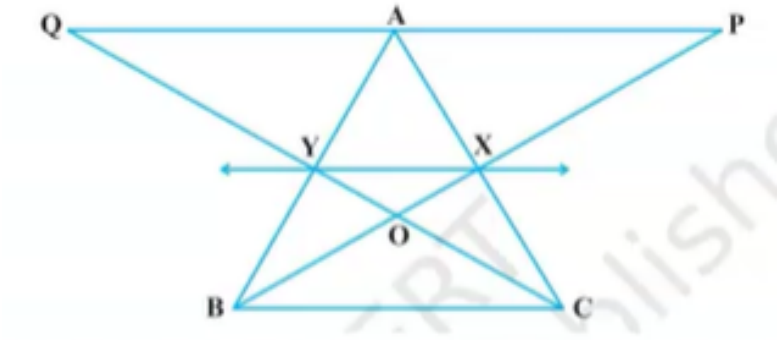
33. In figure X and Y are the mid-points of AC and AB respectively, $QP \mid\mid BC$ and CYQ and BXP are straight lines. Prove that $ar(\Delta ABP) = ar(\Delta ACQ)$.



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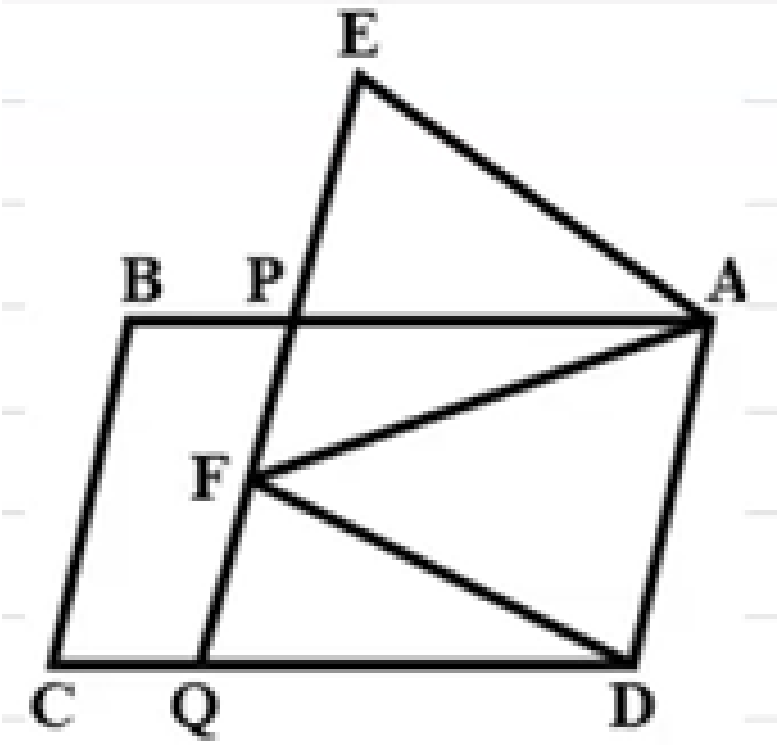
34. In figure, ABCD and AEFD are two parallelograms. Prove that $ar(\Delta PEA) = ar(\Delta QFD)$.



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