MATHS

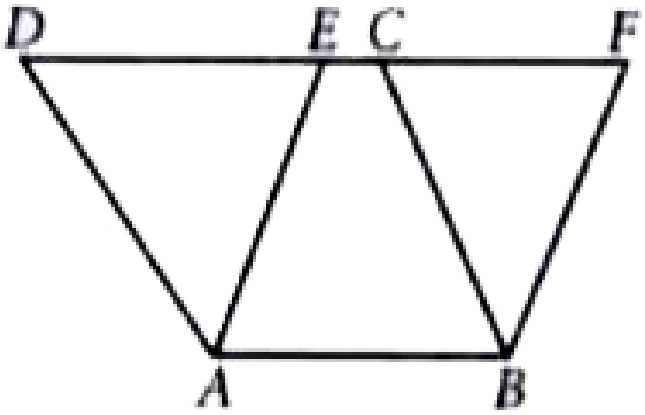
BOOKS - MTG IIT JEE FOUNDATION

FOOTSTEPS TOWARDS (JEE MAIN)

Section A M C Q

1. In the given figure, ABCD and ABFE are parallelograms such that ar(quad. EABC) =19 cm^2 and ar(||gm ABCD) $= 28\ cm^2$. Then,

$ar(\triangle BCF)$ is



A. $4cm^2$

B. $4.5cm^2$

C. $9cm^2$

D. $8cm^2$

Answer: C

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2. The diagonals AC and BD of a parallelogram ABCD intersect each other at the point O. If $\angle DAC = 32^\circ$ and $\angle AOB = 70^\circ$, then $\angle DBC$ is equal to

A. 24°

B. 86°

C. 38°

D. 32°

Answer: C

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3. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, then the value of $x^2 + y^2$ is

A. 90

B. 98

C. 96

D. 94

Answer: B

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4. Two sides of a triangle are of lengths 5 cm and 1.5 cm. The length of the third side of the triangle cannot be

A. 3.6 cm

B. 4.1 cm

C. 3.8 cm.

D. 3.4 cm

Answer: D

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5. A cone, a hemisphere and a cylinder stand on equal bases and have the same height. The ratio of their volumes is

A. $1:2:3$

B. $2:1:3$

C. $2:3:1$

D. $3:2:1$

Answer: A

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6. If the polynomials $az^3 + 4z^2 + 3z - 4$ and $z^3 - 4z + a$ leave the same remainder when divided by z-3, the value of a is

A. -1

B. 0

C. 1

D. 2

Answer: A

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7. If $\bar{x}$ is the mean of 5,6,7,8: $\bar{y}$ is the mean of 8, 9, 10, 11 and $\bar{z}$ is the mean of 5, 6, 78.8. 9. 10. 11 then which of the following is true

A. $\bar{z} = \frac{\bar{x} + \bar{y}}{10}$

B. $\bar{z} = \frac{\bar{x} + \bar{y}}{5}$

C. $\bar{z} = \bar{x} + \bar{y}$

D. $\bar{z} = \frac{\bar{x} + \bar{y}}{2}$

Answer: D

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8. The equation of line parallel to y = 0 and passing through the point (2, -5) is

A. x=2

B. y=-5

C. y=2

D. x=-5

Answer: B

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9. Plot the points P(1, 0), Q(4,0) and S(1, 3). Find the coordinates of the point R such that PQRS is a square.

A. (2,3)

B. (3,3)

C. (4,3)

D. (0,3)

Answer: C

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10. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and $\angle ADC = 140^\circ$, then $\angle BAC$ is equal to

A. 80°

B. 50°

C. 40°

D. 30°

Answer: B

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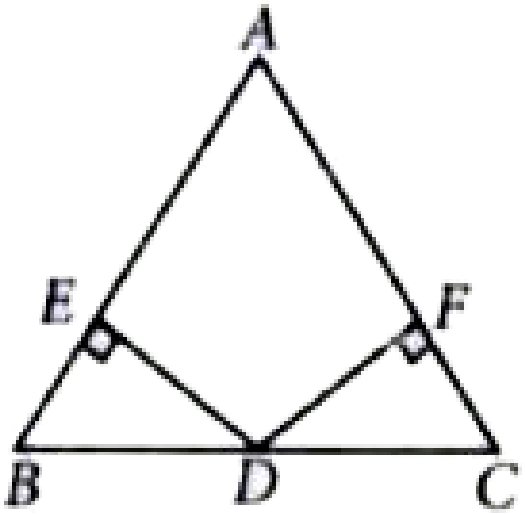
11. In the given figure, is the mid point of BC, DE $\perp$ AB and $DF \perp AC$ such that DE= DE. Then, which of the following is true?



A. AB =AC

B. AO=BC

C. AB =BC

D. none of these

Answer: A

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12. The point of the form (a, -a) always lies on the line

A. x=a

B. y=-a

C. y=x

D. x+y=0

Answer: D

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13. The construction of a triangle ABC, given that BC= 6 cm, $\angle B = 45^\circ$ is not possible when difference of AB and AC is equal to

A. 6.9cm

B. 5.2cm

C. 5.0cm

D. 4.0cm

Answer: A

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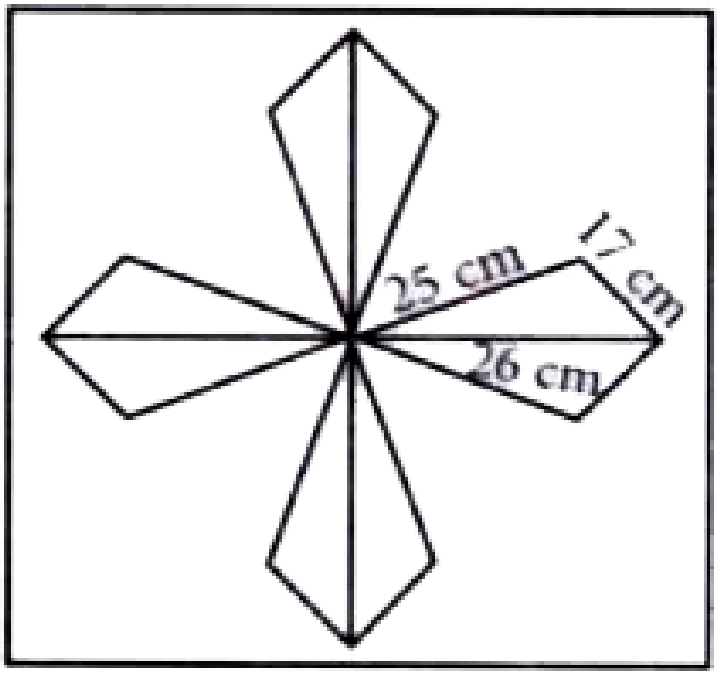
14. A design is madeon a rectangular tile as shown in the given figure. The design has eight triangles, each of the side 25 cm, 17 cm and 26 cm. Find the total cost of making the design at

the rate of 3.50 per cm^2.



A. 4080

B. 6120

C. 3808

D. 5712

Answer: D

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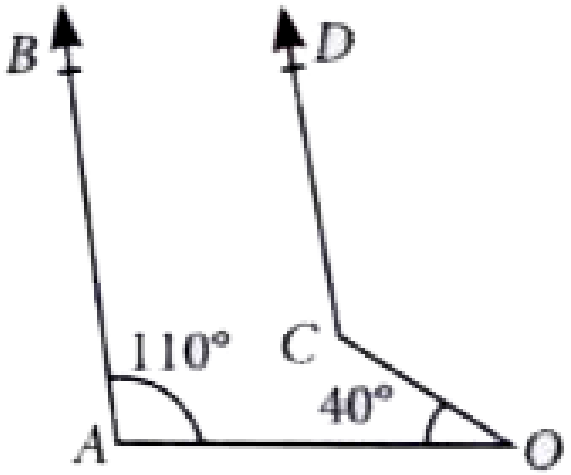
15. In the given figure, AB|| CD. If $\angle AOC = 40^\circ$ and $\angle OAB = 110^\circ$ then $\angle OCD$ equals



A. 130°

B. 150°

C. 80°

D. 100°

Answer: B

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16. Euclid stated that all right angles are equal to each other in the form of

A. an axiom

B. a definition

C. a postulate

D. a proof

Answer: C

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

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

C. $\frac{1}{4}ar(\triangle ABC)$

D. $ar(\triangle ABC)$

Answer: A

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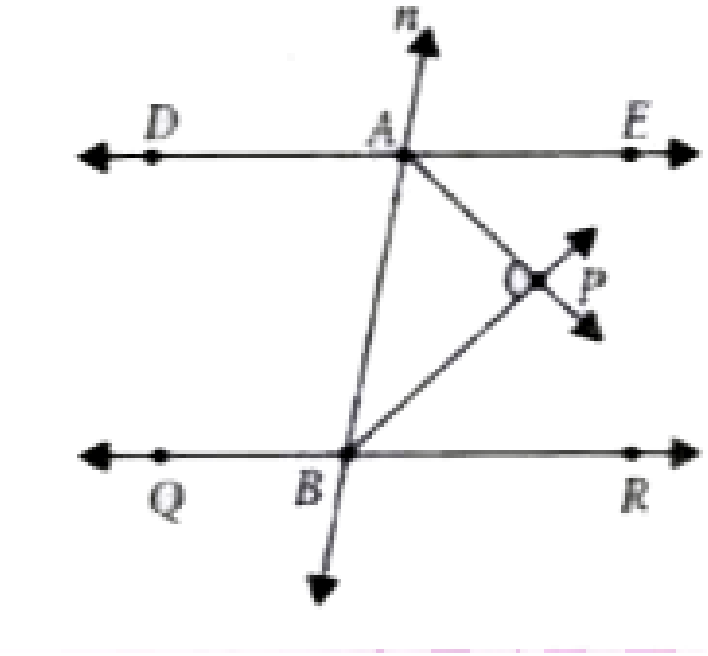
18. In the given figure, DE || QR and AP and BP are bisectors of $\angle EAB$ and $\angle RBA$, respectively.

The value of $\angle APB =$



A. 30°

B. 60°

C. 45°

D. 90°

Answer: D

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Section B Numerical Value Type Questions

1. The length (in cm) of a chord which is at a distance of 8 cm from the centre of a circle of radius 17 cm___

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2. The paint in a certain container is sufficient to paint an area equal to $10.2850m^2$. How many bricks of dimension $21.5\,\text{cm} \times 10\,\text{cm} \times 9.5\,\text{cm}$ can be painted, out of this container?

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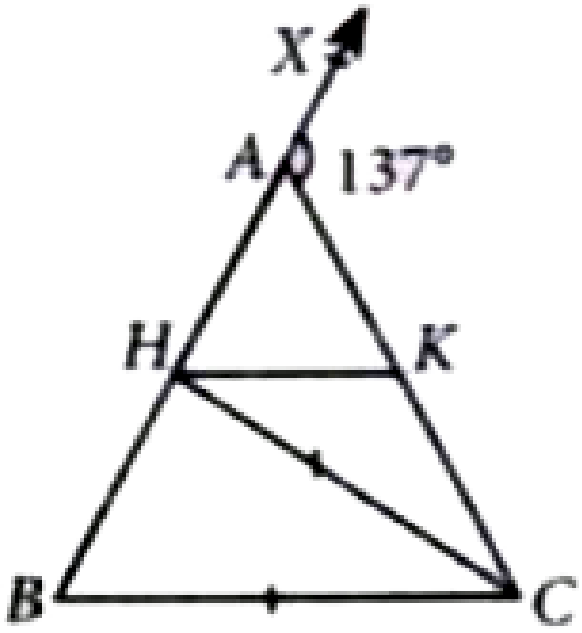
3. In the given figure, AB=AC, CH=CB and HK ||BC. If $\angle CAX = 137^\circ$ and $\angle CHK = K^\circ$, then

the value of K is.....



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4. The sides of a triangle are 40 cm, 70 cm and 90 cm. If the area of the triangle is $k\sqrt{5}\ \ \mathrm{cm}^2$,

then the value of k is____

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5. The value of $\frac{1}{2}\left[\frac{0.96 \times 0.96 \times 0.96 + 0.84 \times 0.84 \times 0.84}{0.96 \times 0.96 - 0.96 \times 0.84 + 0.84 \times 0.84}\right]$ is.

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6. In a quadrilateral STAR, if $\angle S = 120^\circ$, and $\angle T : \angle A : \angle R = 5 : 3 : 7$,

then the measure of $\angle R$ (in degrees) is____

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7. The mean of the numbers 50, 40, 35, x + 10, x + 8, 12, 11, 8, 6 is 30. It median of the data is $n^2 + 10$, then the positive value of n is_____

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8. If $x = 1 + 2^{\frac{1}{3}} + 2^{\frac{2}{3}}$, then the value of $x^3 - 3x^2 - 3x - 1$ is____

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9. The probability of guessing the correct answer to a certain question is $\frac{x}{5}$. If the probability of not guessing the correct answer is $\frac{2x}{3}$, the value of 26x is.....

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10. The sum of absicssa of a point on y-axis and ordinate of a point on x-axis is____

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