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CDS 2 2022

COMPLETE

MATHS

PART 1

LIVE CLASS

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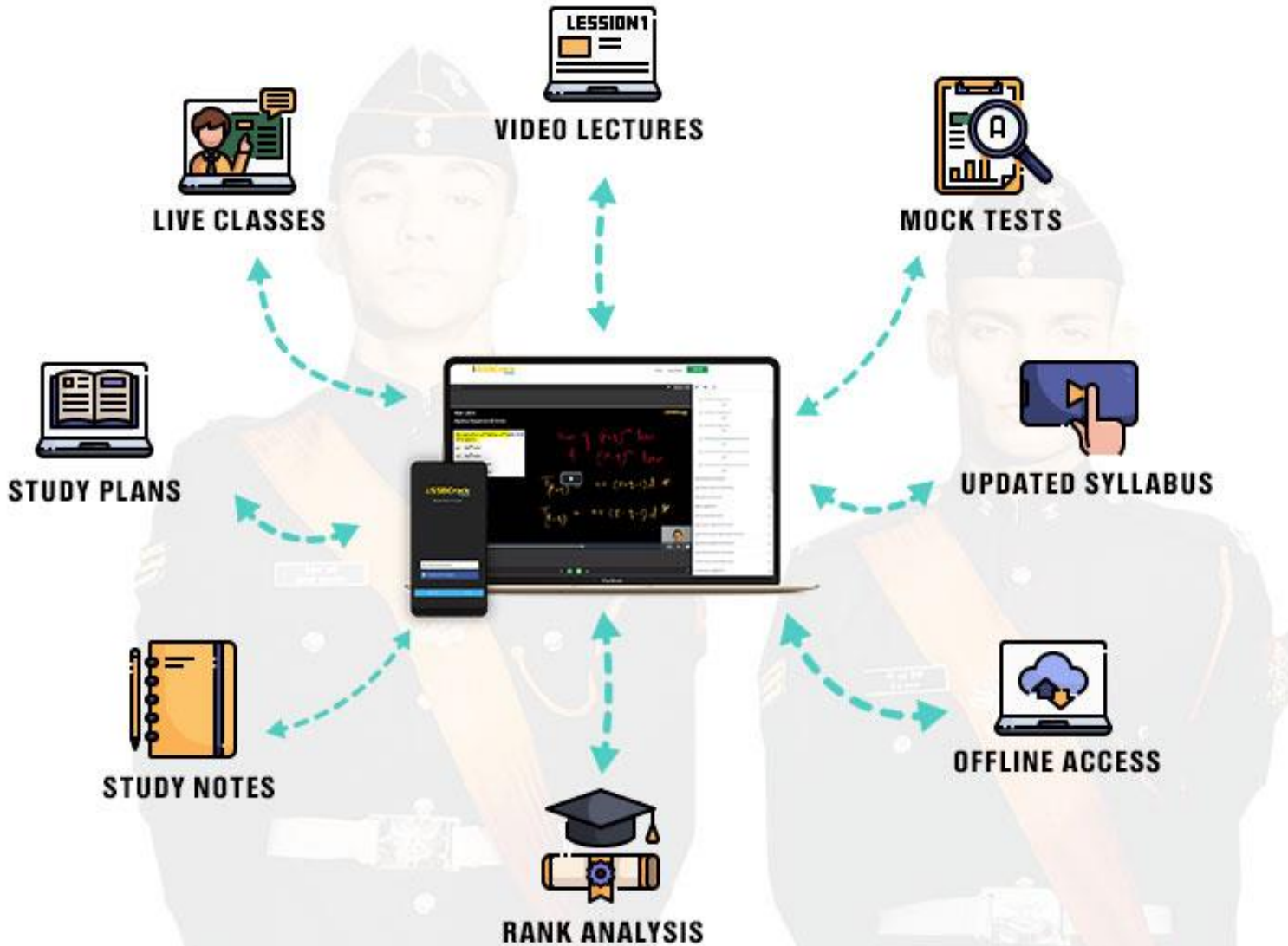

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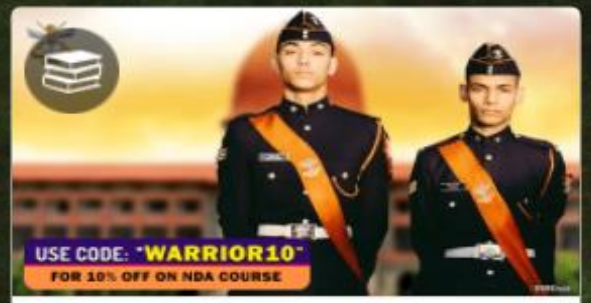

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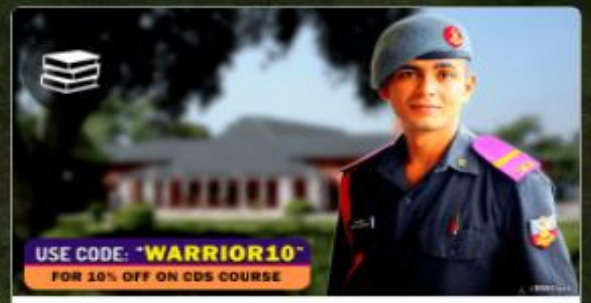

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AFCAT Exam Online Course 2022

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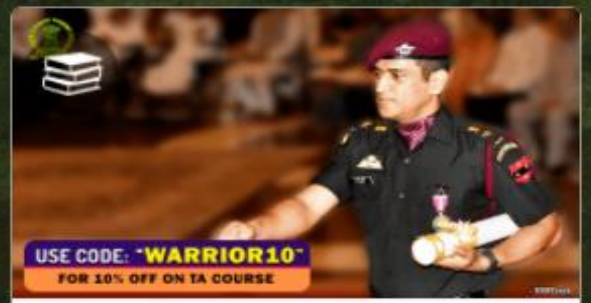

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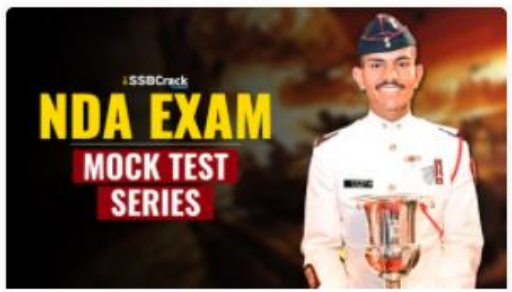

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CDS 2 2022

LIVE CLASS

TIME TABLE

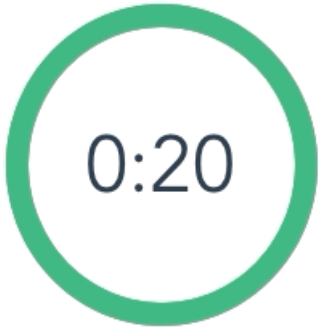
DATE	TIME	SUBJECT
22 AUG 2022	6 PM TO 9 PM	Geography
24 AUG 2022	10 AM TO 1 PM	History
24 AUG 2022	2 PM TO 5 PM	English Part 1
24 AUG 2022	6 PM TO 9 PM	Maths Part 1
29 AUG 2022	2 PM TO 5 PM	English Part 2
29 AUG 2022	6 PM TO 9 PM	Maths Part 2
30 AUG 2022	10 AM to 1 PM	Polity
30 AUG 2022	2 PM TO 5 PM	English Part 3
30 AUG 2022	6 PM TO 9 PM	Maths Part 3
01 SEP 2022	10 AM TO 1 PM	Physics
03 SEP 2022	10 AM TO 1 PM	Current Affairs
03 SEP 2022	2 PM TO 5 PM	Defence Affairs
03 SEP 2022	6 PM TO 9 PM	Chemistry & Biology

Q) What is $\frac{2\sin^3\theta - \sin\theta}{\cos\theta - 2\cos^3\theta}, (0° < \theta < 90°)$

equal to

(a) $\sin\theta$ (b) $\cos\theta$

(c) $\tan\theta$ (d) $\cot\theta$



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equal to

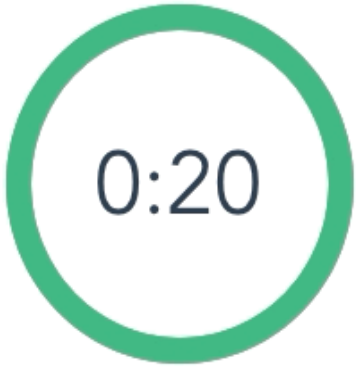
(a) $\sin\theta$ (b) $\cos\theta$

(c) $\tan\theta$ (d) $\cot\theta$

Ans: (c)

Q) A hemispherical bowl of internal radius 18 cm contains a liquid. The liquid is filled in small cylindrical bottles of internal radius 3 cm and internal height 4 cm. What is the number of bottles used to empty the bowl?

(a) 54
(b) 81
(c) 108
(d) 135



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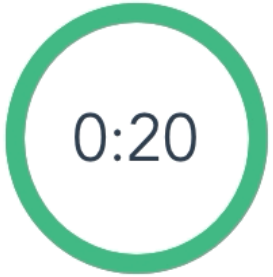
(a) 54 (b) 81

(c) 108 (d) 135

Ans: (c)

Q) AB is a diameter of a circle with centre O. Radius OP is perpendicular to AB. Let Q be any pont on are PB. What is $\angle BAP$ equal to ?

(a) 30°
(b) 40°
(c) 45°
(d) 60°



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(a) 30° (b) 40°
(c) 45° (d) 60°

Ans: (c)

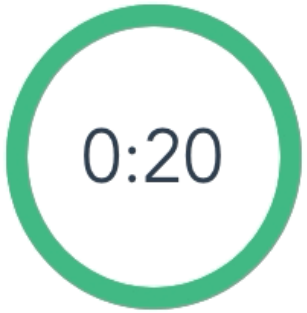
Q) What is the square root of $23 - 4\sqrt{15}$?

(a) $\sqrt{6} - 3\sqrt{2}$

(b) $7 - 3\sqrt{5}$

(c) $\sqrt{3} - 2\sqrt{5}$

(d) $\sqrt{5} - 4\sqrt{3}$



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(a) $\sqrt{6} - 3\sqrt{2}$

(b) $7 - 3\sqrt{5}$

(c) $\sqrt{3} - 2\sqrt{5}$

(d) $\sqrt{5} - 4\sqrt{3}$

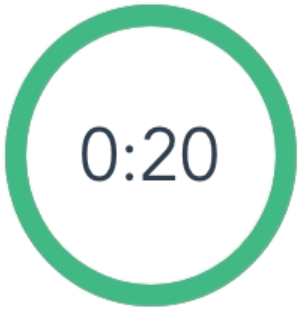
Ans: (c)

Q) If $x = p \sin A \cos B$,

$y = p \sin A \sin B$ and $z = p \cos A$,
then what is the value of
$x^2 + y^2 + z^2$?

(a) $-p^2$ (b) 0

(c) p^2 (d) $2p^2$



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then what is the value of
$x^2 + y^2 + z^2$?

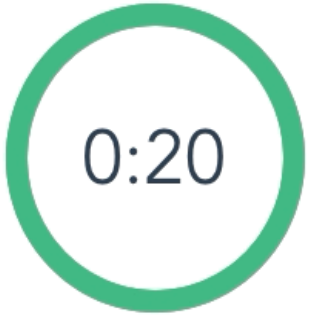
(a) $-p^2$ (b) 0

(c) p^2 (d) $2p^2$

Ans: (c)

Q) 5 pencils, 6 notebooks and 7 erasers cost ₹ 250; whereas 6 pencils, 4 notebooks and 2 erasers cost ₹ 180. What is the cost of 2 notebooks and 4 erasers?

(a) ₹ 90 (b) ₹ 75 (c) ₹ 60 (d) ₹ 40



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(a) ₹ 90 (b) ₹ 75 (c) ₹ 60 (d) ₹ 40

Ans: (b)

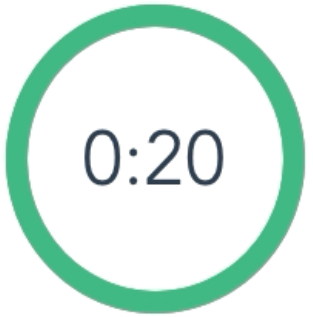
Q) Let p be the area of the square X and q be the area of the square formed on the diagonal of the square X. What is the value of $\frac{p}{q}$?

(a) $\frac{1}{8}$

(b) $\frac{1}{4}$

(c) $\frac{1}{3}$

(d) $\frac{1}{2}$



Q) Let p be the area of the square X and q be the area of the square formed on the diagonal of the square X. What is the value of $\frac{p}{q}$?

(a) $\frac{1}{8}$ (b) $\frac{1}{4}$

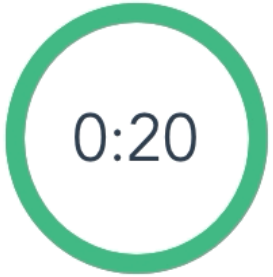
(c) $\frac{1}{3}$ (d) $\frac{1}{2}$

Ans: (d)

Q) A two-digit number is such that the product of the digits is 8. If 63 is added to this number, the digits interchange their places. What is the sum of the digits in the number ?

(a) 6 (b) 7

(c) 8 (d) 9



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(a) 6 (b) 7

(c) 8 (d) 9

Ans: (d)

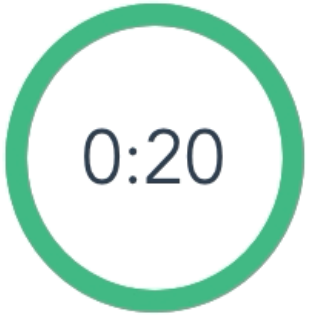
Q) If $(2ab - b^2) : (6a^2 - ab) = 1 : 6$, then what is $(a + b) : (a - b)$ equal to?

(a) 3 only

(b) 5 only

(c) –3 or 3

(d) –5 or 5



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(a) 3 only

(b) 5 only

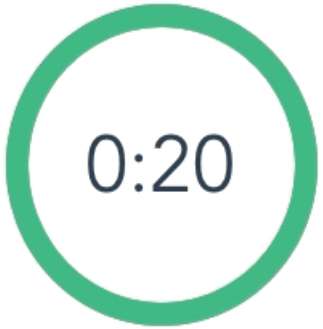
(c) –3 or 3

(d) –5 or 5

Ans: (d)

Q) The sides of a triangle ABC are 4 cm, 6 cm and 8 cm. With the vertices of the triangle as centres, three circles are drawn each touching the other two externally. What is the sum of the radii of the three circles?

(*a*) 6 cm (*b*) 7 cm (*c*) 9 cm (*d*) 10 cm



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(*a*) 6 cm (*b*) 7 cm (*c*) 9 cm (*d*) 10 cm

Ans: (c)

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Q) If A, B and C are int4rior angles of a triangle ABC, then what is

$$\tan\left(\frac{B+C}{2}\right)+\sin\left(\frac{B+C}{2}\right)$$
$$-\cot\left(\frac{A}{2}\right)-\cos\left(\frac{A}{2}\right)$$ equal to ?

(a) 0

(b) $\frac{1}{2}$

(c) $\sin\left(\frac{A+B+C}{4}\right)$

(d) $\tan\left(\frac{A+B+C}{4}\right)$

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$$\tan\left(\frac{B+C}{2}\right)+\sin\left(\frac{B+C}{2}\right)$$
$$-\cot\left(\frac{A}{2}\right)-\cos\left(\frac{A}{2}\right)$$ equal to ?

(a) 0

(b) $\frac{1}{2}$

(c) $\sin\left(\frac{A+B+C}{4}\right)$

(d) $\tan\left(\frac{A+B+C}{4}\right)$

Ans: (a)

Q) If $x^2 = 17x + y$ and $y^2 = x + 17y$, $x \neq y$, then what is the value of $\sqrt{x^2 + y^2 + 1}$?

(a) 17 (b) 19

(c) 23 (d) 27

Q) If $x^2 = 17x + y$ and $y^2 = x + 17y$, $x \neq y$, then what is the value of $\sqrt{x^2 + y^2 + 1}$?

(a) 17 (b) 19

(c) 23 (d) 27

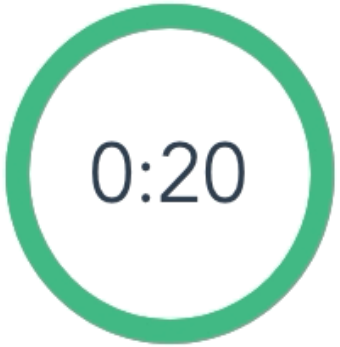
Ans: (a)

Q) If $a + b + c = 0$, then which of the following are correct?

1. $a^3 + b^3 + c^3 = 3abc$
2. $a^2 + b^2 + c^2 = -2(ab + bc + ca)$
3. $a^3 + b^3 + c^3 = -3ab(a + b)$

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3



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2. $a^2 + b^2 + c^2 = -2(ab + bc + ca)$
3. $a^3 + b^3 + c^3 = -3ab(a + b)$

Select the correct answer using the code given below.

(a) 1 and 2 only (b) 2 and 3 only

(c) 1 and 3 only (d) 1, 2 and 3

Ans: (d)

Q) The minute hand of a clock is 21 cm long. What is the area on the face of the clock described by the minute hand between 10:10 am and 10:30 am? (take $\pi = \frac{22}{7}$)

(a) 231 cm^2
(b) 331 cm^2
(c) 462 cm^2
(d) 492 cm^2

Q) The minute hand of a clock is 21 cm long. What is the area on the face of the clock described by the minute hand between 10:10 am and 10:30 am? (take $\pi = \frac{22}{7}$)

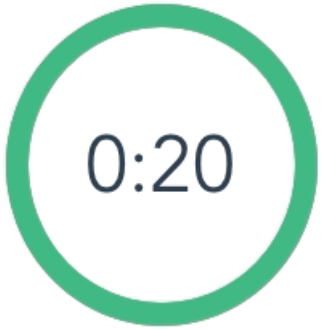
(a) 231 cm^2 (b) 331 cm^2

(c) 462 cm^2 (d) 492 cm^2

Ans: (c)

Q) For what integral value of x is $\dfrac{12}{7-\dfrac{6}{7-\dfrac{3}{5-x}}} = x$?

(a) 4 (b) 3 (c) 2 (d) 1



Q) For what integral value of x is $\dfrac{12}{7-\dfrac{6}{7-\dfrac{3}{5-x}}} = x$?

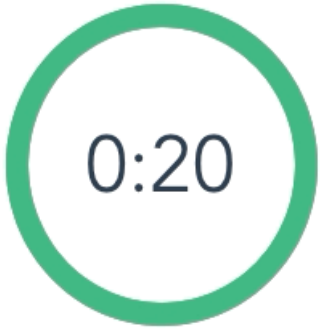
(a) 4 (b) 3 (c) 2 (d) 1

Ans: (c)

Q) 3 cubes each of volume 343 cm^3 are joined end to end. What is the total surface area of the resulting cuboid?

(a) 343 cm^2 (b) 350 cm^2

(c) 686 cm^2 (d) 700 cm^2



Q) 3 cubes each of volume $343\ cm^3$ are joined end to end. What is the total surface area of the resulting cuboid?

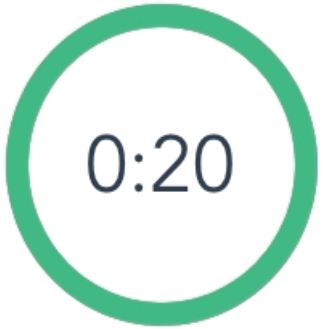
(a) $343\ cm^2$ (b) $350\ cm^2$

(c) $686\ cm^2$ (d) $700\ cm^2$

Ans: (c)

Q) What is the remainder when $2^{1000000}$ is divided by 7?

(a) 1 (b) 2 (c) 4 (d) 6



Q) What is the remainder when $2^{1000000}$ is divided by 7?

(a) 1 (b) 2 (c) 4 (d) 6

Ans: (b)

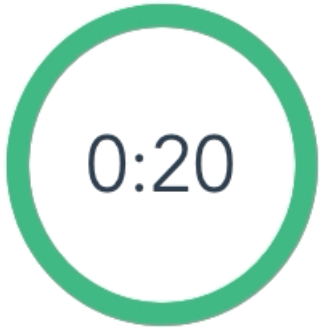
Q) In a triangle ABC, $AB = AC$ and BC is produced to D such that $\angle ACD = x$, then what is $\angle BAC$ equal to?

(a) $2x - 90°$

(b) $2x - 180°$

(c) $180° - 2x$

(d) $\frac{x}{2}$



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(a) $2x - 90°$

(b) $2x - 180°$

(c) $180° - 2x$

(d) $\frac{x}{2}$

Ans: (b)

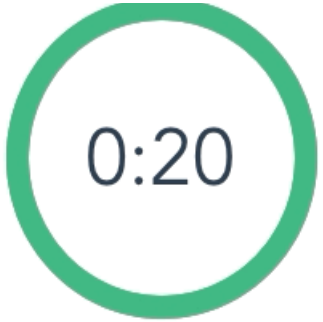
Q) If the perimeter of an isosceles right triangle is $4(2+\sqrt{2})$ cm, then what is its area in square cm?

(a) 8

(b) 12

(c) 16

(d) 24



Q) If the perimeter of an isosceles right triangle is $4(2+\sqrt{2})$ cm, then what is its area in square cm?

(a) 8

(b) 12

(c) 16

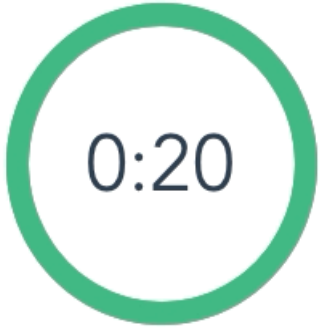
(d) 24

Ans: (a)

Q) $41^{43} + 43^{43}$ is divisible by

(a) 80 (b) 84

(c) 86 (d) 88



Q) $41^{43} + 43^{43}$ is divisible by

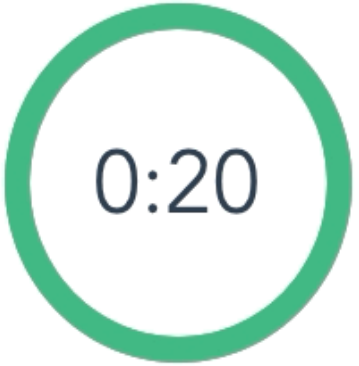
(a) 80 (b) 84

(c) 86 (d) 88

Ans: (b)

Q) How many zeros are there in the product $1^{50} \times 2^{49} \times 3^{48} \times \ldots \times 50^{1}$?

(a) 262
(b) 261
(c) 246
(d) 235



Q) How many zeros are there in the product $1^{50} \times 2^{49} \times 3^{48} \times \ldots \times 50^{1}$?

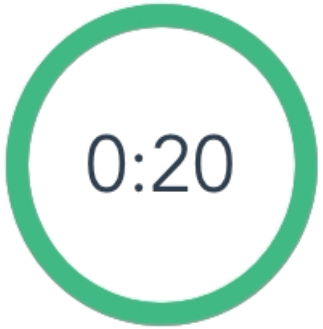
(a) 262
(b) 261
(c) 246
(d) 235

Ans: (a)

Q) If the system of equations $7x + ky = 27$ and $kx + 7y = 19$ have unique solution, then which one of the following is correct

(a) $k \neq 7$ (b) $k \neq 13$

(c) $k = 7$ (d) $= 13$



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(a) $k \neq 7$ (b) $k \neq 13$

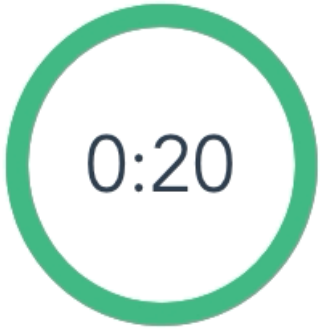
(c) $k = 7$ (d) $= 13$

Ans: (a)

Q) How many terms are there in the following product?

$$(a_1 + a_2 + a_3)\,(b_1 + b_2 + b_3 + b_4)\,(c_1 + c_2 + c_3 + c_4 + c_5)$$

(a) 15 (b) 30 (c) 45 (d) 60



Q) How many terms are there in the following product?

$$(a_1 + a_2 + a_3)\,(b_1 + b_2 + b_3 + b_4)\,(c_1 + c_2 + c_3 + c_4 + c_5)$$

(a) 15 (b) 30 (c) 45 (d) 60

Ans: (d)

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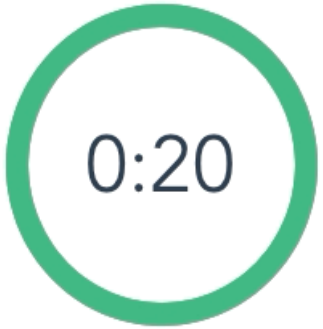
Q) What is the least value of $3 \sin^2 \theta + 4 \cos^2 \theta$?

(a) 5 (b) 4 (c) 3 (d) 2



Q) What is the least value of $3\sin^2\theta + 4\cos^2\theta$?

(a) 5 (b) 4 (c) 3 (d) 2

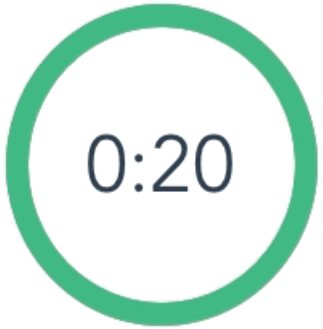
Ans: (c)

Q) If $43^x \times 47^y = (2021)^2$, $x \neq 0$, $y \neq 0$, then what is the value of the following?

$$\frac{4xy + x + y}{2xy - x - y}$$

(a) 5 (b) 15

(c) 25 (d) 45



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$$\frac{4xy + x + y}{2xy - x - y}$$

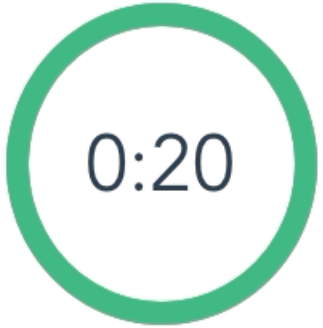
(a) 5 (b) 15

(c) 25 (d) 45

Ans: (a)

Q) ΔABC is similar to ΔDEF. The perimeters of ΔABC and ΔDEF are 40 cm and 30 cm respectively. What is the ratio of $(BC + CA)$ to $(EF + FD)$ equal to?

(a) 5 : 4 (b) 4 : 3 (c) 3 : 2 (d) 2 : 1



Q) ΔABC is similar to ΔDEF. The perimeters of ΔABC and ΔDEF are 40 cm and 30 cm respectively. What is the ratio of $(BC + CA)$ to $(EF + FD)$ equal to?

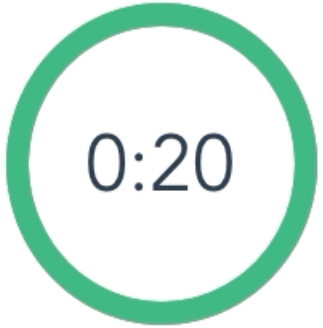
(a) 5 : 4 (b) 4 : 3 (c) 3 : 2 (d) 2 : 1

Ans: (b)

Q) A hollow spherical shell is made up of a metal of density $3\ g/cm^3$. If the internal and external radii are 5 cm and 6 cm respectively, then what is the mass of the shell?

$\left(\text{Take } \pi = \frac{22}{7}\right)$

(*a*) 1144 g (*b*) 1024 g (*c*) 840 g (*d*) 570 g



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$\left(\text{Take } \pi = \frac{22}{7}\right)$

(*a*) 1144 g (*b*) 1024 g (*c*) 840 g (*d*) 570 g

Ans: (a)

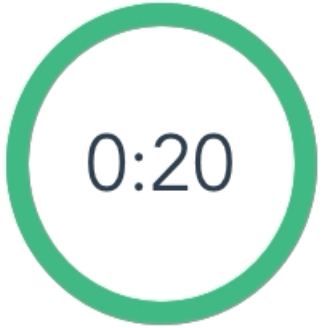
Q) A circle of radius 25 cm has a chord of length 48 cm. What is the length of the perpendicular drawn from the centre of the circle to the chord?

(a) 5 cm

(b) 5·5 cm

(c) 6·5 cm

(d) 7 cm



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(a) 5 cm

(b) 5·5 cm

(c) 6·5 cm

(d) 7 cm

Ans: (d)

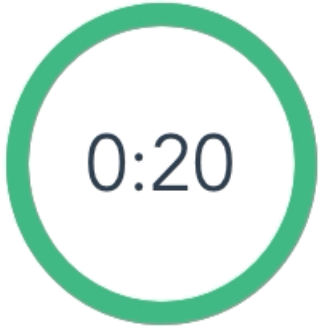
Q) In a triangle ABC, right angled at B, $AB + BC = 10(1 + \sqrt{3})$ cm length of the hypotenuse is 20 cm. What is the value of $\tan A + \tan C$?

(a) $\frac{4}{\sqrt{3}}$

(b) $\frac{2}{\sqrt{3}}$

(c) $\sqrt{3}$

(d) $2\sqrt{3}$



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(b) $\frac{2}{\sqrt{3}}$

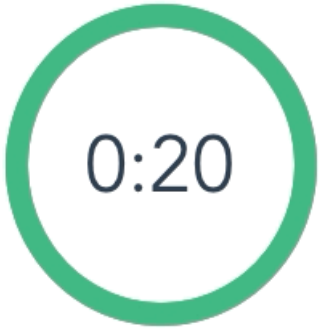
(c) $\sqrt{3}$

(d) $2\sqrt{3}$

Ans: (a)

Q) The expression $\frac{(x^3-1)(x^2-9x+14)}{(x^2+x+1)(x^2-8x+7)}$ simplifies to

$(a)\ (x-1)$ $(b)\ (x-2)$ $(c)\ (x-7)$ $(d)\ (x+2)$



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$(a)\ (x-1)$ $(b)\ (x-2)$ $(c)\ (x-7)$ $(d)\ (x+2)$

Ans: (b)

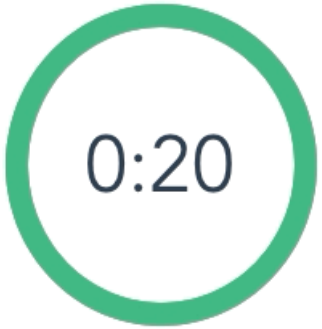
Q) A solid consisting of a right circular cone of radius x and height $2x$ standing on a hemisphere of radius x (take $\pi = \frac{22}{7}$) The volume of the solid is equal to that of a

(a) Sphere of radius x

(b) sphere of diameter x

(c) cylinder of radius x

(d) cylinder of radius $\sqrt{2}$x



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(a) Sphere of radius x

(b) sphere of diameter x

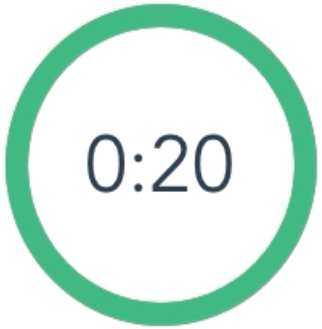
(c) cylinder of radius x

(d) cylinder of radius $\sqrt{2}$x

Ans: (a)

Q) What is the remainder when $27^{27} - 15^{27}$ is divided by 6?

(a) 0 (b) 1 (c) 3 (d) 4



Q) What is the remainder when $27^{27} - 15^{27}$ is divided by 6?

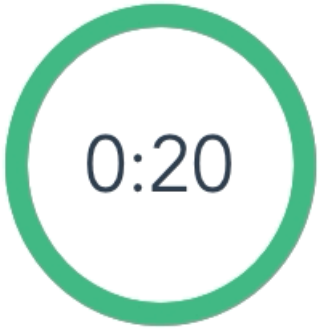
(a) 0 (b) 1 (c) 3 (d) 4

Ans: (a)

Q) What is the median of the following data?

2, 3, –1, 2, 6, 8, 9

(*a*) 2 (*b*) 3 (*c*) 4 (*d*) 5



Q) What is the median of the following data?

2, 3, –1, 2, 6, 8, 9

(*a*) 2 (*b*) 3 (*c*) 4 (*d*) 5

Ans: (b)

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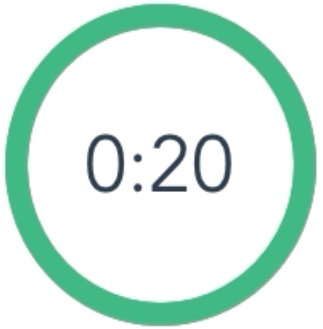
Q) Two isosceles triangles have equal vertical angles and their areas are in the ratio 4.84 : 5.29. What is the ratio of their corresponding heights?

(*a*) 11 : 23 (*b*) 23 : 25 (*c*) 22 : 23 (*d*) 484 : 529



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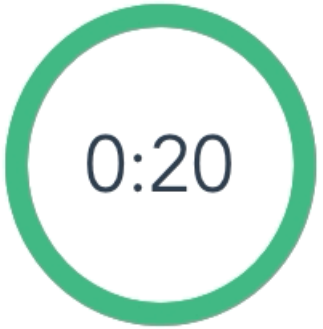
(*a*) 11 : 23 (*b*) 23 : 25 (*c*) 22 : 23 (*d*) 484 : 529

Ans: (c)

Q) If squaring a positive real number x is same as adding 12, then what is x equal to?

(a) 2 *(b)* 3

(c) 4 *(d)* 5



Q) If squaring a positive real number x is same as adding 12, then what is x equal to?

(a) 2 *(b)* 3

(c) 4 *(d)* 5

Ans: (c)

Q) Consider the following data with regard to production of cars (in lakhs):

	Year 2015	Year 2016
Country *A*	35	38
Country *B*	45	47
Country *C*	88	93
Country *D*	75	79
Country *E*	58	60.9

In which of the countries, the production of cars has increased by more than or equal to 5% in 2016 over 2015?

(*a*) *B* and *E*
(*b*) *A*, *C* and *D* only
(*c*) *A*, *C*, *D* and *E*
(*d*) *A*, *D* and *E* only

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(*b*) *A*, *C* and *D* only
(*c*) *A*, *C*, *D* and *E*
(*d*) *A*, *D* and *E* only

Ans: (c)

Q) If $x = 9999$, then what is the value of the following?

$$\frac{4x^3 - x}{(2x + 1)(6x - 3)}$$

(a) 1111 *(b)* 2222

(c) 3333 *(d)* 6666

Q) If $x = 9999$, then what is the value of the following?

$$\frac{4x^3 - x}{(2x + 1)(6x - 3)}$$

(a) 1111 *(b)* 2222

(c) 3333 *(d)* 6666

Ans: (c)

Q) A ladder 10 m long reaches a point 10 m below the top of a vertical flagstaff. From foot of the ladder, the elevation of top of the flagstaff is 60°. What is the height of flagstaff ?

(a) 12 m (b) 15 m

(c) 16 m (d) 20 m

Q) A ladder 10 m long reaches a point 10 m below the top of a vertical flagstaff. From foot of the ladder, the elevation of top of the flagstaff is 60°. What is the height of flagstaff ?

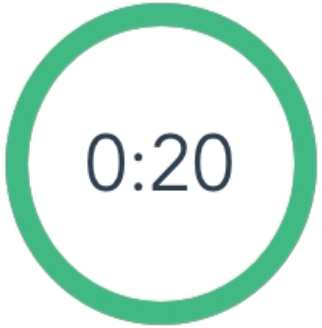
(a) 12 m (b) 15 m

(c) 16 m (d) 20 m

Ans: (b)

Q) What is the unit digit in the expansion of 67^{32}?

(a) 1 (b) 3 (c) 7 (d) 9



Q) What is the unit digit in the expansion of 67^{32}?

(a) 1 (b) 3 (c) 7 (d) 9

Ans: (a)

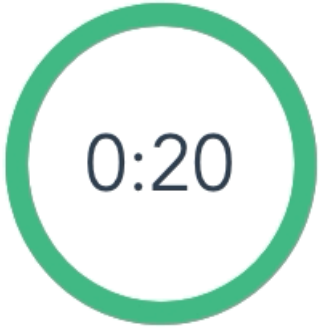
Q) What is the ratio of interior angle to exterior angle of a regular polygon of n sides?

(a) n

(b) $\frac{n-1}{2}$

(c) $\frac{n-2}{2}$

(d) $\frac{2(n-2)}{3}$



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(a) n

(b) $\frac{n-1}{2}$

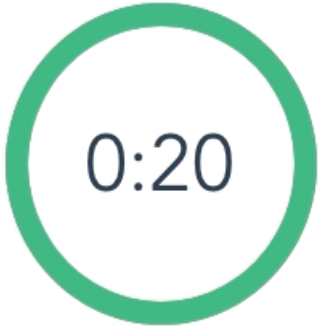
(c) $\frac{n-2}{2}$

(d) $\frac{2(n-2)}{3}$

Ans: (c)

Q) A cone and a hemisphere have equal bases and equal volumes. What is the ratio of the height of the cone to the radius of the hemisphere?

(*a*) 1 : 1 (*b*) 2 : 1 (*c*) 3 : 2 (*d*) 4 : 3



Q) A cone and a hemisphere have equal bases and equal volumes. What is the ratio of the height of the cone to the radius of the hemisphere?

(*a*) 1 : 1 (*b*) 2 : 1 (*c*) 3 : 2 (*d*) 4 : 3

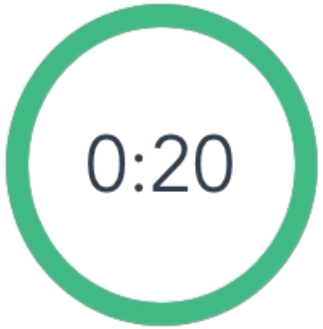
Ans: (b)

Q) Consider the following inequalities:

1. $\sin 1° < \cos 57°$
2. $\cos 60° > \sin 57°$

Which of the above is/are correct?

(*a*) 1 only
(*b*) 2 only
(*c*) Both 1 and 2
(*d*) Neither 1 nor 2



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2. $\cos 60° > \sin 57°$

Which of the above is/are correct?

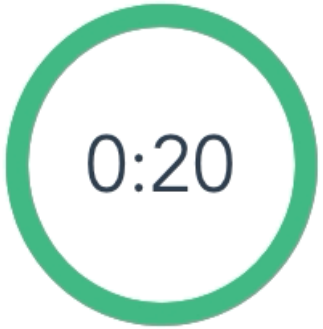
(*a*) 1 only (*b*) 2 only

(*c*) Both 1 and 2 (*d*) Neither 1 nor 2

Ans: (a)

Q) Let the average score of a class of boys and girls in an examination be p. The ratio of boys and girls in the class is 3 : 1. If the average score of the boys is $(p + 1)$, then what is the average score of the girls?

(a) $(p - 1)$ (b) $(p - 2)$ (c) $(p - 3)$ (d) p



Q) Let the average score of a class of boys and girls in an examination be p. The ratio of boys and girls in the class is 3 : 1. If the average score of the boys is $(p + 1)$, then what is the average score of the girls?

(a) $(p-1)$ (b) $(p-2)$ (c) $(p-3)$ (d) p

Ans: (c)

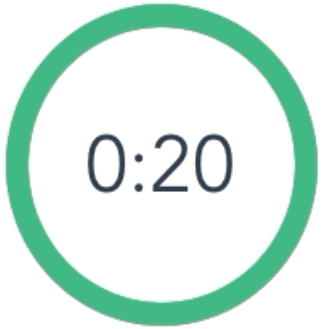
Q) If $(x - k)$ is the H.C.F. of $x^2 + ax + b$ and $x^2 + cx + d$, then what is the value of k?

(a) $\frac{d - b}{c - a}$

(b) $\frac{d - b}{a - c}$

(c) $\frac{d + b}{c + a}$

(d) $\frac{d - b}{c + a}$



Q) If $(x - k)$ is the H.C.F. of $x^2 + ax + b$ and $x^2 + cx + d$, then what is the value of k?

(a) $\frac{d - b}{c - a}$

(b) $\frac{d - b}{a - c}$

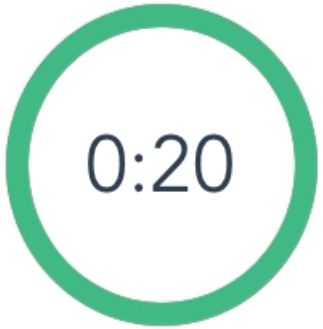
(c) $\frac{d + b}{c + a}$

(d) $\frac{d - b}{c + a}$

Ans: (b)

Q) If $\operatorname{cosec}\theta - \cot\theta = m$, then what is $\operatorname{cosec}\theta$ equals to?

$(a)\quad m + \frac{1}{m} \qquad (b)\quad m - \frac{1}{m} \qquad (c)\quad \frac{m}{2} + \frac{2}{m} \qquad (d)\quad \frac{m}{2} + \frac{1}{2m}$



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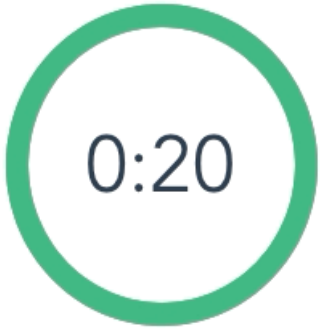
$(a)\quad m + \frac{1}{m} \qquad (b)\quad m - \frac{1}{m} \qquad (c)\quad \frac{m}{2} + \frac{2}{m} \qquad (d)\quad \frac{m}{2} + \frac{1}{2m}$

Ans: (d)

Q) If $\log_{10} x + \log_{10} x^2 = 2\log_{10} x + 1$ then what is the value of x

(a) 1
(b) 2
(c) 5
(d) 10



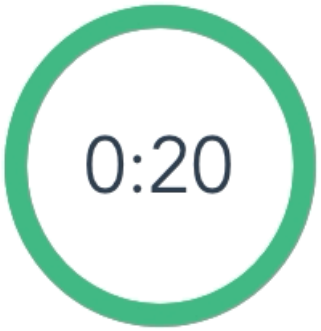
Q) If $\log_{10} x + \log_{10} x^2 = 2\log_{10} x + 1$ then what is the value of x

(a) 1
(b) 2
(c) 5
(d) 10

Ans: (d)

Q) *Data with regard to different types (I, II, III, IV, V) of multivitamin tablets produced in a company (in lakhs):*

Year	I	II	III	IV	V
2000	160	80	70	90	75
2001	200	150	85	160	100
2002	135	35	44	95	85
2003	240	95	120	80	120
2004	180	110	85	95	115
2005	210	150	100	92	110



Which product is puoduced least over the years 2000–2005?

(*a*) Type II (*b*) Type III (*c*) Type IV (*d*) Type V

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2004	180	110	85	95	115
2005	210	150	100	92	110

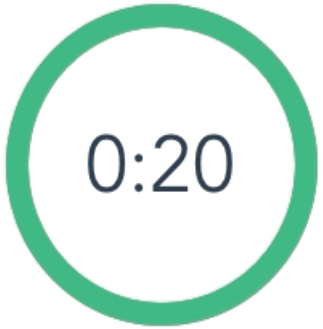
Which product is puoduced least over the years 2000–2005?

(*a*) Type II (*b*) Type III (*c*) Type IV (*d*) Type V

Ans: (b)

Q) ABC is a triangle right angled at A and AD is perpendicular to BC. If $BD = 8$ cm and $DC = 12.5$ cm, then what is the AD equal to?

(a) 7.5 cm (b) 8.5 cm (c) 9 cm (d) 10 cm



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(a) 7.5 cm (b) 8.5 cm (c) 9 cm (d) 10 cm

Ans: (d)

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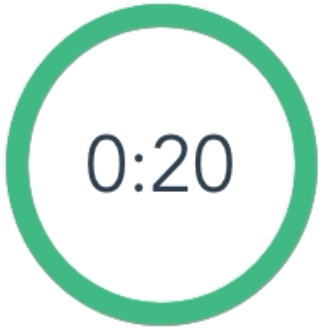
Q) $4^{61} + 4^{62} + 4^{63} + 4^{64}$ is divisible by

(a) 7

(b) 9

(c) 11

(d) 17



Q) $4^{61} + 4^{62} + 4^{63} + 4^{64}$ is divisible by

(a) 7 (b) 9

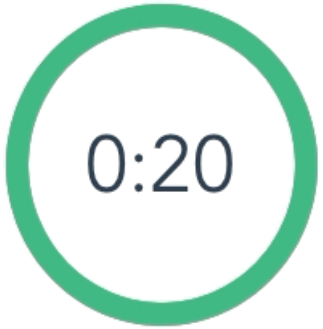
(c) 11 (d) 17

Ans: (d)

Q) A sector is cut from a circle of radius 21 cm. If the length of the arc of the sector is 55 cm, then what is the area of the sector?

(*a*) $577.5\ \text{cm}^2$ (*b*) $612.5\ \text{cm}^2$

(*c*) $705.5\ \text{cm}^2$ (*d*) $725.5\ \text{cm}^2$



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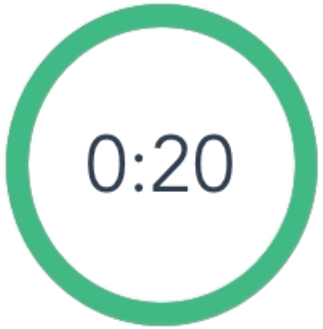
Ans: (a)

Q) What is the minimum value of $\cos^3\theta + \sec^3\theta$ where $0° \leq 90°$?

(a) 0
(b) 1
(c) 2
(d) None of these



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(a) 0
(b) 1
(c) 2
(d) None of these

Ans: (c)

Q) If p and q $(p > q)$ are the roots of the equation $x^2 - 60x + 899 = 0$ then which one of the following is correct?

(a) $p - q - 1 = 0$

(b) $p - 2q + 27 = 0$

(c) $2p - q - 30 = 0$

(d) $3p - 2q - 43 = 0$

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(c) $2p - q - 30 = 0$

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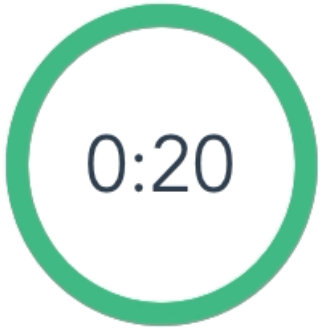
Ans: (b)

Q) The sides of a right-angled triangle are in the ratio

$$x : (x - 1) : (x - 18).$$

What is the perimeter of the triangle?

(*a*) 28 units (*b*) 42 units (*c*) 56 units (*d*) 84 units



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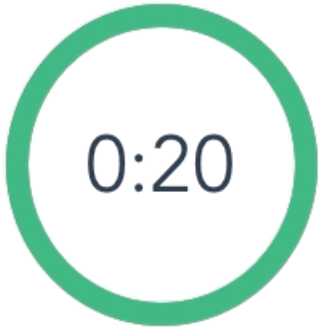
What is the perimeter of the triangle?

(*a*) 28 units (*b*) 42 units (*c*) 56 units (*d*) 84 units

Ans: (c)

Q) If $x + \frac{1}{x} = \frac{5}{2}$, then what is $x^4 - \frac{1}{x^4}$ equal to?

(a) $\frac{195}{16}$ (b) $\frac{255}{16}$ (c) $\frac{625}{16}$ (d) 0



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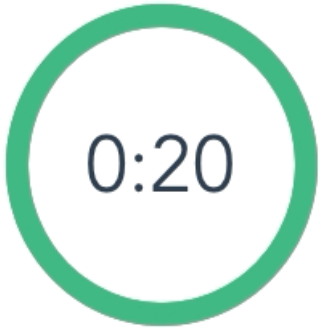
(a) $\frac{195}{16}$ (b) $\frac{255}{16}$ (c) $\frac{625}{16}$ (d) 0

Ans: (b)

Q) A sphere of diameter 6 cm is dropped into a cylindrical vessel partly filled with water. The radius of the vessel is 6 cm. If the sphere is completely submerged in water, then by how much will the surface level of water be raised?

(*a*) 0.5 cm (*b*) 1 cm (*c*) 1.5 cm (*d*) 2 cm



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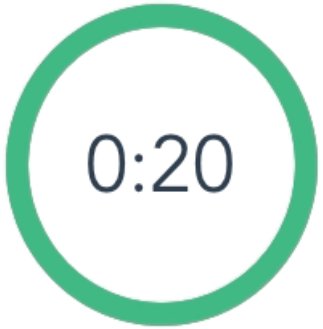
(*a*) 0.5 cm (*b*) 1 cm (*c*) 1.5 cm (*d*) 2 cm

Ans: (b)

Q) An equilateral triangle ABC and a scalene triangle DBC are inscribed in a circle on same side of the arc. What is $\angle BDC$ equal to?

(*a*) 30° (*b*) 45° (*c*) 60° (*d*) 90°



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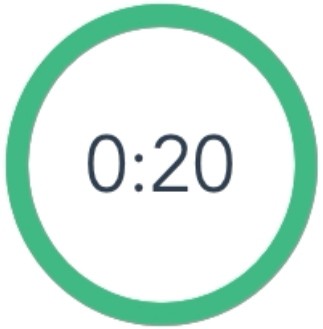
(a) $30°$ (b) $45°$ (c) $60°$ (d) $90°$

Ans: (c)

Q) Let ABC be a triangle right angled at C, then what is $\tan A + \tan B$ equal to?

$(a)\ \frac{a}{bc}$ $(b)\ \frac{a^2}{bc}$ $(c)\ \frac{b^2}{ca}$ $(d)\ \frac{c^2}{ab}$



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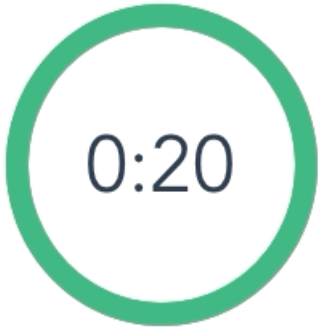
$(a)\ \dfrac{a}{bc}$ $(b)\ \dfrac{a^2}{bc}$ $(c)\ \dfrac{b^2}{ca}$ $(d)\ \dfrac{c^2}{ab}$

Ans: (d)

Q) Let PAB be a secant to a circle intersecting the circle at A and B. Let PT be the tangent segment. If $PA = 9$ cm and $PT = 12$ cm, then what is AB equal to?

(a) 5 cm (b) 6 cm (c) 7 cm (d) 9 cm



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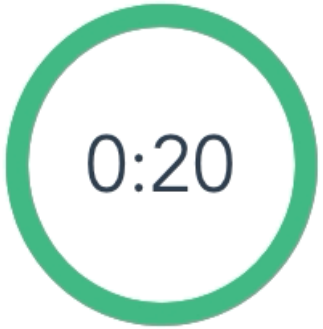
Ans: (c)

Q) If the sum as well as product of the roots of the equation $px^2 - 6x + q = 0$ is 6, then what is $(p + q)$ equal to?

(a) 8 (b) 7 (c) 6 (d) 5



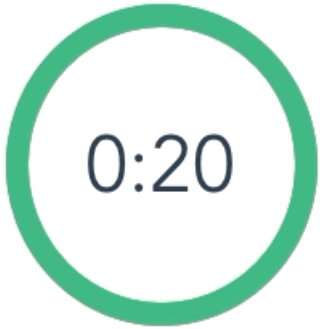
Q) If the sum as well as product of the roots of the equation $px^2 - 6x + q = 0$ is 6, then what is $(p + q)$ equal to?

(a) 8 (b) 7 (c) 6 (d) 5

Ans: (b)

Q) If $\sec\theta + \cos\theta = 5/2$ where $0 \leq \theta \leq 90°$, then what is the value of $\sin^2\theta$?

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{3}{4}$ (d) 1



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Ans: (c)

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24 AUG 2022	6 PM TO 9 PM	Maths Part 1
29 AUG 2022	2 PM TO 5 PM	English Part 2
29 AUG 2022	6 PM TO 9 PM	Maths Part 2
30 AUG 2022	10 AM to 1 PM	Polity
30 AUG 2022	2 PM TO 5 PM	English Part 3
30 AUG 2022	6 PM TO 9 PM	Maths Part 3
01 SEP 2022	10 AM TO 1 PM	Physics
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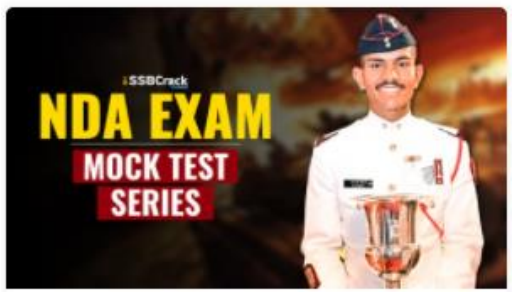

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