PAKTURK 8 th National Interschool Maths Olympiad, 201	
Q1: Find the value of n if $5000-25n=991+993+995+997+999?$	Q4: Evaluate $\frac{(-15) \div 5 - 2}{-11 - 4 \times (-3)} = \frac{1}{2}$ Solution:
A) -1 B) 0 √C) 1 D) 25	Solution:
Solution: 5000 - 25n = 991 + 993 + 995 + 997 + 999	$\frac{(-15) \div 5 - 2}{-11 - 4 \times (-3)} = \frac{-3 - 2}{-11 + 12} = -5$
$5000 - 25n = 4975 \Rightarrow 25n = 25 \Rightarrow n = 1$	√A)-5 B)5 C)-1 D)1
Answer: C	Answer: A
Q2: Evaluate 1–3+5–7+9–11+49=?	Q5: If $241 \times 113 = 27233$ then what is $241 \times 339 = ?$
A) -25 B) -24 C) 24 √D) 25	A) 8169B) 27233C) 54466√D) 81699
Solution:	Solution:
$1 - 3 + 5 - 7 + 9 - 11 \dots + 49 =$	$241 \times 339 = 3 \times 27233 = 81699$
$-2 \times 12 + 49 = -24 + 49 = 25$ Answer: D	Answer: D Q6: Evaluate the following. $a^{1} + (t^{2}) + a^{1} + t^{2} + t^{5} = 0$
Q3: Evaluate	$2\frac{1}{2} \times (4\frac{2}{3}) - 2\frac{1}{3} + 4\frac{2}{3} - 15 = ?$
(-3) + (-3)(-3) + (-3)(-3)(-3) + (-3)(-3)(-3)(-3)(-3) = ?	Solution:
A) -120 B) -30 √C) 60 D) 90	$2\frac{1}{2} \times (4\frac{2}{3}) - 2\frac{1}{3} + 4\frac{2}{3} - 15 = \frac{5}{2} \times \frac{14}{3} - \frac{7}{3} + \frac{14}{3} - 15$
Solution:	35-7+14 42
(-3) + (-3)(-3) + (-3)(-3)(-3) + (-3)(-3)(-3)(-3) =	$\frac{35-7+14}{3}-15=\frac{42}{3}-15=14-15=-1$
-3 + 9 - 27 + 81 = -30 + 90 = 60	A) -29 B) 29 C) 1 √D) -1
	Answer: D

Charge 7 Solutions

 Qr:
$$\left\{ \begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times 2\frac{1}{7} \end{bmatrix} \times \left(1\frac{2}{3} - 1\frac{1}{3}\right) \right\} + 7 = 2$$
 Q9: If $x = 13.5$ then $2x + 33$. A 1465 $x + 5x = 2^{-1}$

 VA) 1
 B) 5
 C) 7
 D) 105

 Solution:
 $\left[\begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times 2\frac{1}{7} \end{bmatrix} \times \left(\frac{2}{3} - 1\frac{1}{3}\right) \right] + 7 = 2$
 A) 13
 B) 256.5
 C) 283.5
 V2 20

 $\left[\begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times 2\frac{1}{7} \end{bmatrix} \times \left(\frac{2}{3} - 1\frac{1}{3}\right) \right] + 7 = 2$
 $\left[\begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times 2\frac{1}{7} \end{bmatrix} \times \left(\frac{2}{3} - 6\frac{1}{5} \right) \right] + 7 = 2$
 Answer: D
 D10: Solve the following equation for $x : 0.4(2x - 3) - 0.3(5 - 4x) = 6.3$
 $\left[\begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times \frac{15}{7} \end{bmatrix} \times \left(\frac{5}{3} - \frac{6}{5}\right) \right] + 7 = 2$
 Answer: A
 D42: Solve the following equation for $x : 0.4(2x - 3) - 0.3(5 - 4x) = 6.3$
 $\left[\begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times \frac{15}{7} \end{bmatrix} \times \left(\frac{7}{3} - \frac{1}{3}\right) \times \frac{1}{7} = 1$
 Answer: A
 D42: $x - 3 - 0.3(5 - 4x) = 6.3 = 2$
 $\left[\begin{bmatrix} 30 + \left(1 + 3\frac{2}{7}\right) \times \frac{7}{15} \times \frac{1}{7} = 1 \right] \times \frac{1}{5} = \frac{1}{7} = 1$
 $D4 = 2x + 3x + 4x + 5x + 6x = 20x = 20 \times 13.5 = 20 \times$

Q12: Half of 1% of 60 is one less than what number?

√A) 1.3 B) -0.7 C) 0.6 D) 0.7

Solution:

$$60 \times \frac{1}{100} \times \frac{1}{2} = x - 1 \Longrightarrow 0.3 = x - 1 \Longrightarrow x = 1.3$$

Answer: A

Q13: If
$$a(c-d)-b(c-d)=51$$
 and $c-d=3$
then $a-b+c-d=?$

A) -20 B) 17 √C) 20 D) 48

Solution:

$$a-b+c-d = ? \Longrightarrow (a-b)(c-d) = 51$$
$$a-b = 17 \Longrightarrow a-b+c-d = 17+3=20$$

Answer: C

Q14: Which one of the following cannot be the sum of three consecutive odd integers?

A) 39 B) 51 √C) 78 D) 81

Solution:

The sum of three consecutive odd integers can be again odd number. That is why 78 cannot be answer.

Answer: C

Q15: Which one of the following operation results is an even number?

Solution:

A) $23^{2} + 4 = 529 + 4 = 533$ B) $18^{2} + 7 = 324 + 7 = 331$ C) $29^{2} + 8 = 841 + 8 = 849$ \sqrt{D}) $21^{2} + 5 = 441 + 5 = 446$ Answer: D Answe

which one of the following is correct?

A) a < b < c **B)** c < a < b

 \sqrt{C}) a < c < b D) c < b < a

Solution:

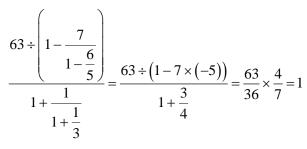
$$a = \frac{1}{0.05} = 20, b = \frac{1}{0.02} = 50$$
 and $c = \frac{3}{0.12} = 25$

Answer: C

Q17: Evaluate
$$\frac{63 \div \left(1 - \frac{7}{1 - \frac{6}{5}}\right)}{1 + \frac{1}{1 + \frac{1}{3}}} = ?$$

A)
$$\frac{1}{63}$$
 B) $\frac{7}{9}$ C) 63 \sqrt{D}) 1

Solution:



Answer: D

Solution:

$$\frac{85}{100}x = \frac{3}{5}x + 23 \Longrightarrow \frac{85}{100}x - \frac{3}{5}x = 23 \Longrightarrow \frac{85x - 60x}{100} = 23$$

 $\frac{25x}{100} = 23 \Longrightarrow \frac{x}{4} = 23 \Longrightarrow x = 92$

Answer: C

Q19: If
$$a = 0.3$$
 and $b = 0.4$ then find
 $\frac{0.08}{0.2} - \frac{0.12}{0.036}$ in terms of a and b?

A) a-b **B)** $\frac{a-b}{a}$ **VC)** $\frac{ab-1}{a}$ **D)** $\frac{a-b}{ab}$

Solution:

$$\frac{0.08}{0.2} - \frac{0.12}{0.036} = 0.4 - \frac{1}{0.3} = b - \frac{1}{a} = \frac{ab - 1}{a}$$

Answer: C

√A) 20 B) 23 C) 31 D) 65

Solution:

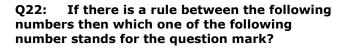
 $2 \times 5 \times 13 = 130 \Longrightarrow 2 + 5 + 13 = 20$

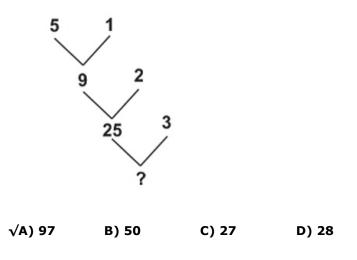
Answer: A

Solution:

$$\left(\sqrt{x^2}\right)^2 = \left(\left(3^2\right)^2\right)^2 \Longrightarrow x^2 = 3^8 \Longrightarrow x = 3^4 = 81$$

Answer: C





Solution:

Rule:

$$(5 \times 1 + (5 - 1)) = 5 + 4 = 9 \rightarrow 1st$$
 line
 $(9 \times 2 + (9 - 2)) = 18 + 7 = 25 \rightarrow 2nd$ line
 $(25 \times 3 + (25 - 3)) = 75 + 22 = 97 \rightarrow 3rd$ line

Answer: A

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Q23: If the ages of three kids are in the ratio of3:5:7 and in 10 years the sum of their ages is 135.What are their ages now?

A) 3, 5, 7	B) 12, 20, 28
√C) 21, 35, 49	D) 27, 45, 63

Solution: The sum of the ages now 135-3x10=105. And their ages smallest to biggest is

$$\frac{3}{15} \times 105 = 21$$
, $\frac{5}{15} \times 105 = 35$, $\frac{7}{15} \times 105 = 49$.

Answer: C

Q24: The price of a watch is \$300 on Monday. On Tuesday the price is reduced by 10%. On Wednesday, Tuesday's price is increased by 10%. What is the price of the watch on Wednesday?

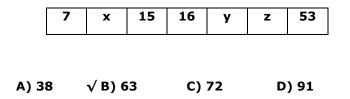
A) \$290	√) \$297
C) \$310	D) \$390

Tuesday:
$$\$3.00 \times \frac{90}{1.00} = \$270$$

Solution:
Wednesday: $\$27.0 \times \frac{11.0}{1.00} = \297

Answer: B

Q25: In the following table, if each number which is in the middle is average of previous and next number then x+y+z=?



Class 7 Solutions

$$x = \frac{7+15}{2} = \frac{22}{2} = 11,$$

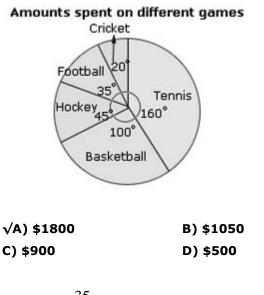
$$\frac{15+y}{2} = 16 \Rightarrow 15+y = 32 \Rightarrow y = 1$$
Solution:

$$z = \frac{17+53}{2} = \frac{70}{2} = 35 \Rightarrow$$

$$x + y + z = 11 + 17 + 35 = 63$$

Answer: B

Q26: The pie chart represents the amount spent on different games by a school administration in a year. If the money spent on football is \$175, then what is the total amount spent on games?

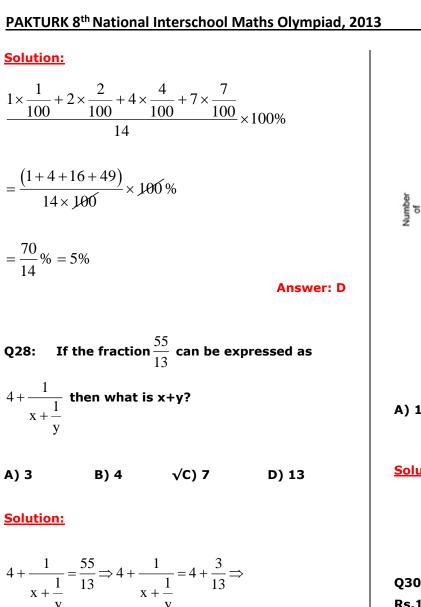


Solution:
$$\frac{35}{360}x = 175 \implies x = $1800$$

Answer: A

Q27: Ahmad mixes 1 litre of 1% butterfat milk,
2 litres of 2% butterfat milk, 4 litres of 4%
butterfat milk and 7 litres of 7% butterfat milk.
What percentage of the resulting fourteen litres of milk is butterfat?

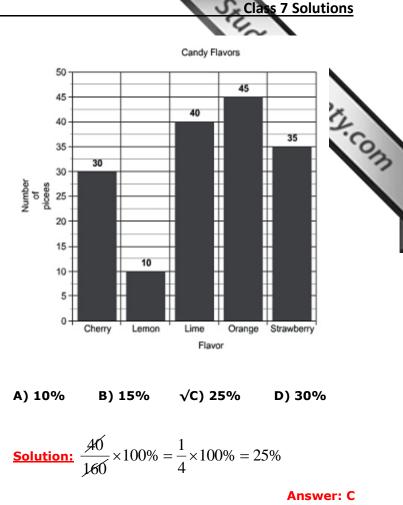
A) 140/- D) 100/- C) 70/- - /D) E0/-



$$x + \frac{1}{y} = \frac{13}{3} = 4 + \frac{1}{3} \Longrightarrow x + y = 4 + 3 = 7$$

Answer: C

Q29: In the following bar charts, numbers of candy flavors are given. What is the percentage of lime flavors to whole candies?



Q30: A man loses 1/4th of his money, then wins Rs.15, loses 1/4th of what he has and wins Rs.22 and finds that he has exactly what he had at the beginning. The amount which he had originally was_____.

A) Rs.19 B) Rs.38 \sqrt{C} Rs.76 D) Rs.133

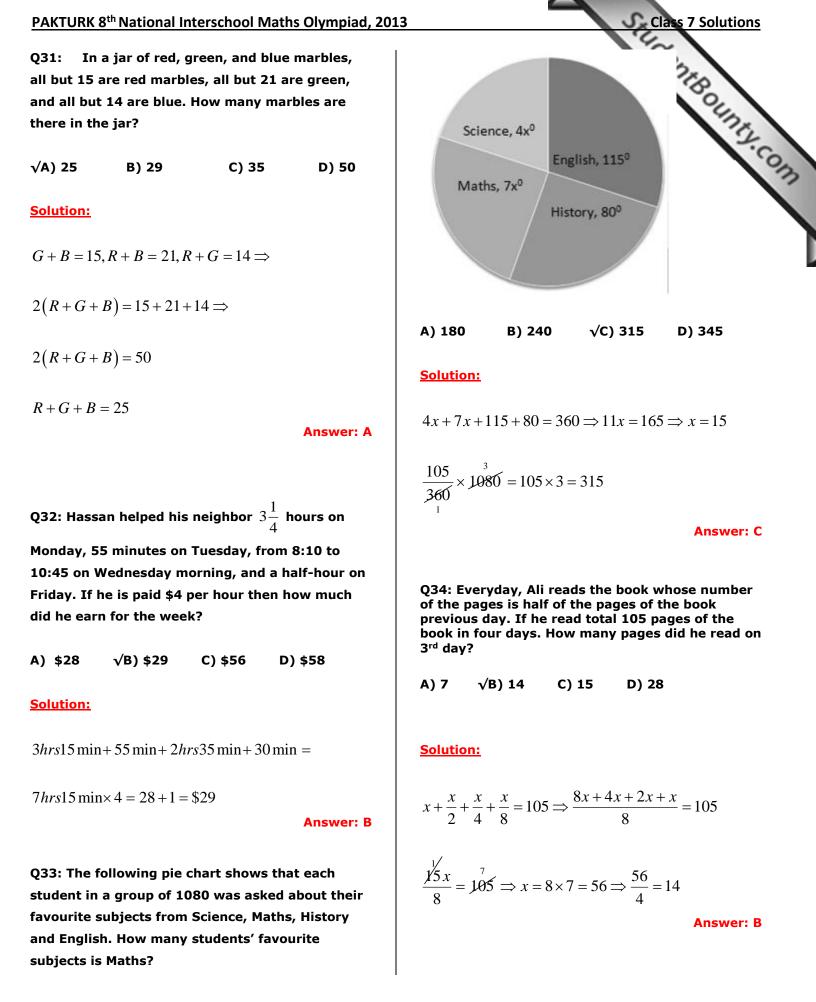
Solution:

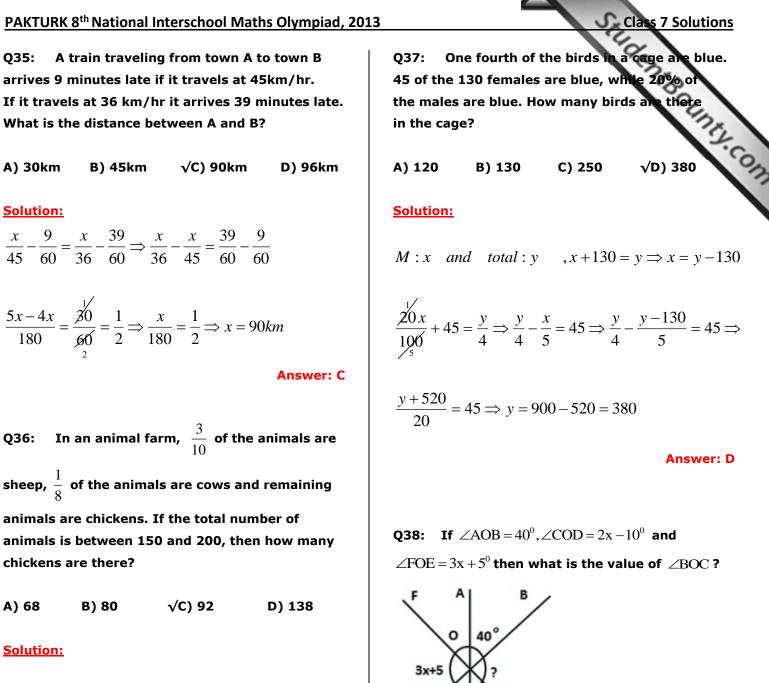
$$x - \frac{x}{4} = \frac{3x}{4} \Longrightarrow \left(\frac{3x}{4} + 15\right)\frac{3}{4} + 22 = x \Longrightarrow$$

$$\frac{45}{4} + 22 = x - \frac{9x}{16} \Rightarrow \frac{\cancel{133}}{\cancel{4}} = \frac{\cancel{7}x}{\cancel{16}} \Rightarrow$$

$$x = 19 \times 4 = Rs.76$$

Answer: C





Sheep:
$$\frac{3x}{10}$$
, Cows: $\frac{x}{8}$, Chicken: $x - \left(\frac{3x}{10} + \frac{x}{8}\right)$

A) 30km

Solution:

A) 68

Solution:

Chicken :
$$x - \frac{12x + 5x}{40} = x - \frac{17x}{40} = \frac{40x - 17x}{40} = \frac{23x}{40}$$

if
$$x = 160$$
 then $\frac{23 \times 160}{40} = 23 \times 4 = 92$

Answer: C



Solution:

$$3x + 5 + 40 + 2x - 10 = 180 \Longrightarrow 5x + 35 = 180$$

$$5x = 145 \implies x = 29 \implies \angle BOC = 3 \times 29 + 5 = 92$$

Answer D

Q39: If the areas of three different faces of a cuboid are 20cm², 36cm² and 45cm² then what is the volume of the cuboid in cm³?

A) 45cm^3 B) 90cm^3 \sqrt{C}) 180cm^3 D) 270cm^3

Solution:

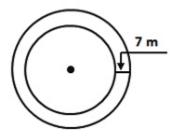
 $b \times h = 20 = 4 \times 5$, $b \times l = 36 = 4 \times 9$,

 $h \times l = 45 = 5 \times 9 \Longrightarrow l \times b \times h = 9 \times 4 \times 5 = 180 cm^3$

Answer: C

Q40: A 7 metre wide road surrounds a circular park. If the circumference of the park is 44 m,

then the area of the road is_____. $\left(\pi = \frac{22}{7}\right)$



A) 231cm² √B) 462cm²
 C) 616cm² D) 1232cm²

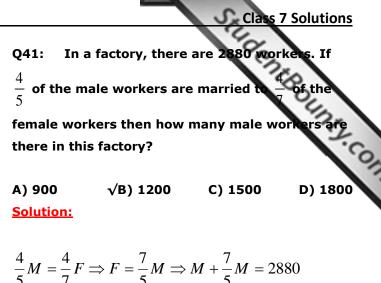
Solution:

$$2\pi r = 44 \Longrightarrow \frac{1}{2} \times \frac{\frac{1}{22}}{7} \times r = \frac{1}{44} \Longrightarrow r = 7$$

$$\pi R^{2} - \pi r^{2} = \pi (R^{2} - r^{2}) = \pi (R - r)(R - r)$$

$$\pi (14-7)(14+7) = \frac{22}{\cancel{7}} \times \cancel{7} \times 21 = 22 \times 21 = 462 cm^2$$

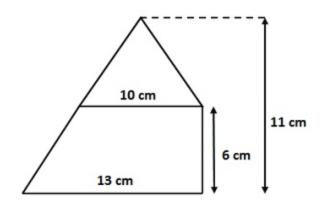
Answer: B

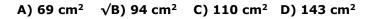


$$\frac{\sqrt[4]{2}M}{5} = 2^{240} \implies M = 5 \times 240 = 1200$$

Answer: B

Q42: The figure shows a trapezium and a triangle. The area of the figure in cm² is_____





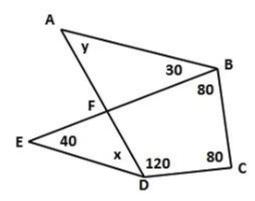
Solution:

Area of Triangle + Area of Trapezium =

$$\frac{1}{2}bh + \frac{1}{2}(a+b)h = \frac{1}{2} \Big[10 \times 5 + (10+13) \times 6 \Big] =$$

 $\frac{1}{2}(50+23\times6) = \frac{1}{2}(50+138) = \frac{188}{2} = 94cm^2$

Q43: What is the value of x+y in the figure shown?



A) 80° √B) 90°

C) 180° D) 360°

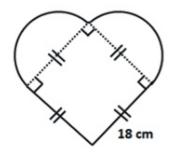
Solution:

sum of the angles of quadrilateralABCD and sum of the angles of quadrilateralEBCD is (y+30+80+120+80) + (40+x+120+80+80) = 720

$$y + 310 + x + 320 = 720 \implies x + y = 720 - 630 = 90^{\circ}$$

Answer: B

Q44: If one side of the square is 18cm in the following figure then what is the total area of the figure? $(\pi = 3)$

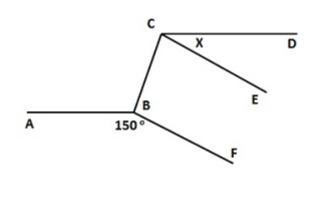


A) 243cm² B) 324cm² √C) 567cm² D) 1134cm²

Solution:

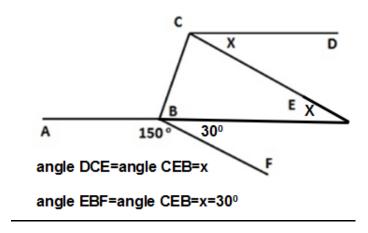
Class 7 Sc. Flachtbornun, conn Area of Circle + Area of $\pi r^2 + l^2 = 3 \times 9^2 + 18^2 = 243 + 324 = 567 cm^2$

If AB//CD, BF//CE and $\angle ABF = 150^{\circ}$ Q45: then what is the value of angle x?



√A) 30º B) 40° C) 50⁰ D) 60⁰

Solution:



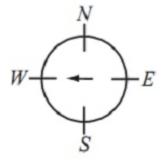
Answer: A

Answer: C

Q46: Initially, a spinner points west. Aqil moves it clockwise $3\frac{1}{4}$ revolutions and then anti-

clockwise $5\frac{3}{4}$ revolutions. In what direction does

the spinner point after the two moves?

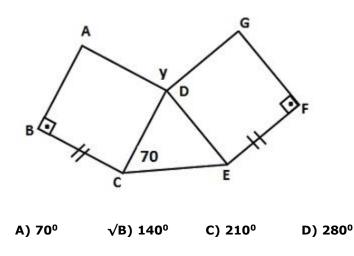


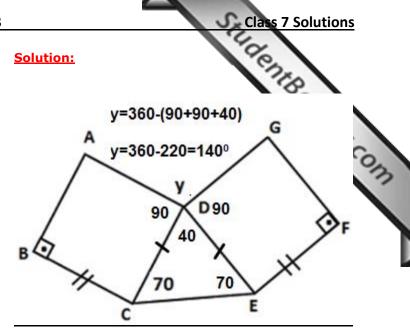
A) North \sqrt{B} East C) South D) Northwest

<u>Solution</u>: After clockwise $3\frac{1}{4}$ revolutions pointer will show N. After anti-clockwise $5\frac{3}{4}$ revolutions pointer will show E.

Answer: B

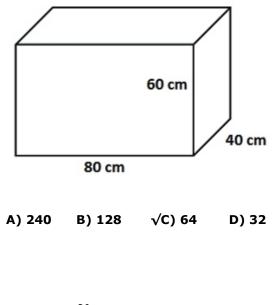
Q47: In the following figure, if ABCD and DEFG are identical squares and angle ECD is 70⁰ then what is the value of angle y(angle ADG)?





Answer: B

Q48: How many small cuboids with the sides 10cm, 15cm and 20cm can be placed into the following cuboid with the sides 40cm, 60cm and 80cm?

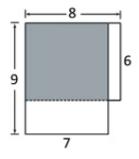


Solution: $\frac{V_{big}}{V_{small}} = \frac{40 \times 60 \times 80}{10 \times 15 \times 20} = 4 \times 4 \times 4 = 64$

Answer: C

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Q49: A 6m by 8m rectangle overlaps a 7m by 9m rectangle so that they share two sides and a vertex as shown. In square meters, what is the total area of the rectangles not shaded?

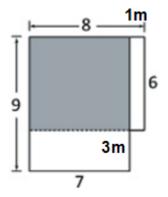


B) 69m²

A) 111m²

C) 42m² √D) 27m²

Solution:



Area of unshaded region = $1 \times 6 + 3 \times 7 = 27m^2$

Answer: D

Q50: Yaseen bought paper sheets for Rs.6800 and spent Rs.550 on transport. Then he paid to his worker Rs.650 to make 360 boxes by using paper sheets. And if he sold each box for Rs.25 then what is his percentage profit overall?

A) 10% √B) 12.5% C) 20% D) 25%

Solution:

Clas 7 St. FildentBounty.com $\Pr{ofit} = 360 \times 25 - (6800 + 550 + 650)$

=9000 - 8000 = Rs.1000

Percentage Pr of
$$it = \frac{1000}{8000} \times 100\%$$

$$=\frac{100}{8}\% = 12.5\%$$

Answer: B