

THIRD InTRa SchOOl MaTHEMaTICS of yMplAD 2012

CLASS VII

Solutions

Ans1.

Going down 2 floors from the 11th floor brings Chaz to the 9th floor.  
Going down 4 floors from the 9th floor brings Chaz to the 5th floor.  
Thus, Chaz gets off the elevator on the 5th floor.

ANSWER: (D)

Ans2.

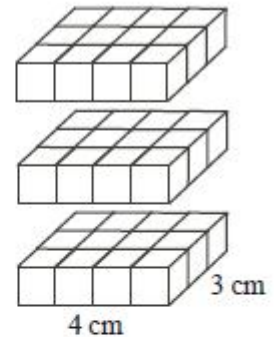
The four angles shown,  $150^\circ$ ,  $90^\circ$ ,  $x^\circ$ , and  $90^\circ$ , form a complete rotation, a  $360^\circ$  angle.  
Thus,  $150^\circ + 90^\circ + x^\circ + 90^\circ = 360^\circ$ , or  $x^\circ = 360^\circ - 150^\circ - 90^\circ - 90^\circ = 30^\circ$ .

ANSWER: (D)

Ans3.

*Solution 1*

To build the solid rectangular prism, we could first construct the 4 cm by 3 cm base using  $4 \times 3 = 12$  of the  $1 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm}$  blocks. Two more layers identical to the first layer, placed on top of the first layer, would give the prism its required 3 cm height. This would require 12 more  $1 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm}$  blocks in layer two and 12 more in layer three, or  $12 \times 3 = 36$  blocks in total.



*Solution 2*

Equivalently, this question is asking for the volume of the rectangular prism. The volume of a prism is the area of the base times the height, or  $V = 4 \text{ cm} \times 3 \text{ cm} \times 3 \text{ cm} = 36 \text{ cm}^3$ . Since the volume of each of the  $1 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm}$  blocks is  $1 \text{ cm}^3$ , then 36 blocks are needed to build the solid rectangular prism. (The prism can actually be built with 36 blocks as seen in Solution 1.)

ANSWER: (E)

Ans4.

Since 700 is the product of 35 and  $y$ , then  $35 \times y = 700$  or  $y = 700 \div 35 = 20$ .  
Since 20 is the product of 5 and  $x$ , then  $5 \times x = 20$  or  $x = 20 \div 5 = 4$ .

ANSWER: (B)

*Solution 1*

Ans5. 1.0011

Ans6. 2

Ans7. 2

Ans8. 4

Ans9. 1/2003

Ans10. 42 (6\*6+6)

*Solution*

Multiplying out,

$$\begin{array}{r}
 879 \\
 \times 492 \\
 \hline
 1758 \\
 7911 \\
 3516 \\
 \hline
 432468
 \end{array}$$

The sum is  $1+9+1+2=13$ .

ANSWER: (A)

Ans11.

*Solution*

$$68 + (-36) = 32$$

ANSWER: (A)

Ans12.

The mean of 5 consecutive integers is equal to the number in the middle.

Since the numbers have a mean of 21, if we were to distribute the quantities equally, we would have 21, 21, 21, 21, and 21.

Since the numbers are consecutive, the second number is 1 less than the 21 in the middle, while the fourth number is 1 more than the 21 in the middle.

Similarly, the first number is 2 less than the 21 in the middle, while the fifth number is 2 more than the 21 in the middle.

Thus, the numbers are  $21 - 2$ ,  $21 - 1$ , 21,  $21 + 1$ ,  $21 + 2$ .

The smallest of 5 consecutive integers having a mean of 21, is 19.

Ans13.

Ans14.

13. There are 60 seconds in a minute, 60 minutes in an hour, 24 hours in a day and 7 days in a week. Therefore, the number of seconds in one week is  $60 \times 60 \times 24 \times 7$ .

ANSWER: (D)

Ans15.

The number below and between 17 and 6 is  $17 - 6 = 11$ .

The number below and between 8 and 11 is  $11 - 8 = 3$ .

The number below and between 11 and 2 is  $11 - 2 = 9$ .

The number below and between 7 and 3 is  $7 - 3 = 4$ .

The number below and between 3 and 9 is  $9 - 3 = 6$ .

$$\begin{array}{cccccc}
 8 & 9 & 17 & 6 & 4 & \\
 & 1 & 8 & 11 & 2 & \\
 & & 7 & 3 & 9 & \\
 & & & 4 & 6 & \\
 & & & & x & 
 \end{array}$$

Therefore,  $x = 6 - 4 = 2$ .

ANSWER: (B)

Ans16.

Area N=Area M\*4=400

Side of N=20 cm

Perimeter=4\*20=80 cm

Ans17. Together sunita and Rita ate  $\frac{1}{4} + \frac{3}{10} = \frac{11}{60}$  pie

Left =  $1 - \frac{11}{60} = \frac{49}{60}$

Ram ate  $\frac{2}{3}$  of  $\frac{49}{60}$  so  $\frac{1}{3}$  was left.

Pie left =  $\frac{1}{3}$  of  $\frac{49}{60} = \frac{49}{180}$

Ans18.

*Solution 1*

Since  $AOB$  is a diameter of the circle, then  $\angle AOB = 180^\circ$ .

We are told that the angle in the "Winter" sector is a right angle (or  $90^\circ$ ). Also, we are told that the angle in the "Spring" sector is  $60^\circ$ .

Therefore, the angle in the "Fall" sector is  $180^\circ - 90^\circ - 60^\circ = 30^\circ$ .

What fraction of the complete circle is  $30^\circ$ ?

Since the whole circle has  $360^\circ$ , then the fraction is  $\frac{30^\circ}{360^\circ} = \frac{1}{12}$ .

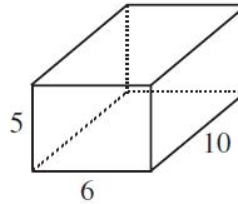
Therefore,  $\frac{1}{12}$  of the students chose fall as their favourite season, or  $\frac{1}{12} \times 600 = 50$  students in total.

Ans19.

The required surface area is  $2(5 \times 6 + 5 \times 10 + 6 \times 10) = 280 \text{ cm}^2$ .

Alternatively, if we fold the net into a rectangular box, we would obtain the following diagram. From this we can see that the faces of the box are two rectangles of area  $30 \text{ cm}^2$ , two rectangles of area  $50 \text{ cm}^2$ , and two rectangles of area  $60 \text{ cm}^2$ .

This gives a total surface area of  $280 \text{ cm}^2$ .



ANSWER: (C)

Q20: Let no of notes be x

$$x \cdot 1 + x \cdot 5 + x \cdot 10 = 480$$

$$16x = 480$$

$$x = 30$$

$$\text{Total notes} = 3 \cdot 30 = 90$$