MATHEMATICAL LITERACY

Instruction: You are offered the test items with one correct answer from five proposed ones.

1. Put the signs (+,-,*,/) instead of *a* and *b* to get right answers.
   (12*a*4)*b*8=24
   (4*b*8)*a*2=16
   42*a*(2*b*3)=7
   So what is an answer for (24*a*6)*b*7=?
   A) 34
   B) 21
   C) 49
   D) 27
   E) 28

2. A bus leaves the city with constant velocity of 80 km/h. After 3 hours a car with constant velocity of 100 km/h leaves the same city towards bus. Calculate the time needed for a car to reach the bus?
   A) 13 h.
   B) 12 h.
   C) 14 h.
   D) 10 h.
   E) 9 h.

3. Two dice are rolled. Determine the probability getting number 1 on both dice.
   A) $\dfrac{1}{11}$
   B) $\dfrac{1}{6}$
   C) 0
   D) $\dfrac{1}{36}$
   E) $\dfrac{1}{12}$

4. There is some rule in given sequence. Find the last number?
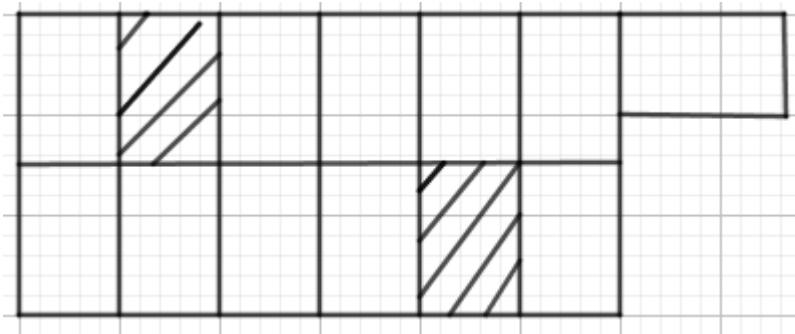   1, 2, 4, 7, 11, …
   A) 20
   B) 18
   C) 16
   D) 24
   E) 28

5. We know the sum of interior angles of triangle is equal to $180°$. 4 triangles are given: $\triangle ABC$, $\triangle EFB$, $\triangle CDF$, $\triangle GED$

Angles with the same letter has equal degree. Find the angle $\angle G$.

Angles	A	B	C	D	E	F	G
Degrees	30°		65°			60°	

A) $70°$

B) $30°$

C) $45°$

D) $100°$

E) $90°$

6. All rectangles of the given figure are equal. Total area of two painted rectangle is $10\,\mathrm{m}^2$. Find the total area of figure.

A) $25\,\mathrm{m}^2$

B) $40\,\mathrm{m}^2$

C) $65\,\mathrm{m}^2$

D) $5\,\mathrm{m}^2$

E) $55\,\mathrm{m}^2$

7. Calculate the volume of water in the cup, which has shape of cub with side of 20 cm. Cup is full.
A) 16 L
B) 2 L
C) 12 L
D) 8 L
E) 4 L

8. Find two consecutive natural numbers such that the sum of their squares is 421
A) 15 and 16
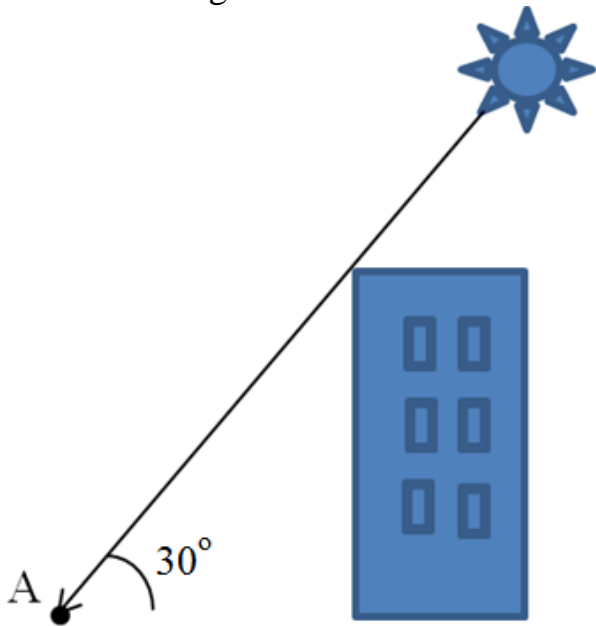B) 12 and 13
C) 13 and 14
D) 14 and 15
E) 12 and 15

9. The price of mobile phone increased by 30% , and decreased by 20% . What is the changing rate of an initial price to the final price of the mobile phone?
   A) 15%
   B) 10%
   C) 6%
   D) 4%
   E) 8%
10. In the first class there are 30 students and its mean of UBT exam results is 100. In the second class there are 20 students and its mean of UBT exam results is 120. Find the mean of UBT exam results of all students in both classes.
   A) 108
   B) 105
   C) 115
   D) 110
   E) 112
11. Moving service price-list of different companies:

	A	B	C
Price per distance (tg/100 km)	1200	1000	800
Price per weight (tg/1000kg)	500	600	800

   Evaluate and help Nazerke to choose the cheapest company to move with 10000 kg to distance 600 km.
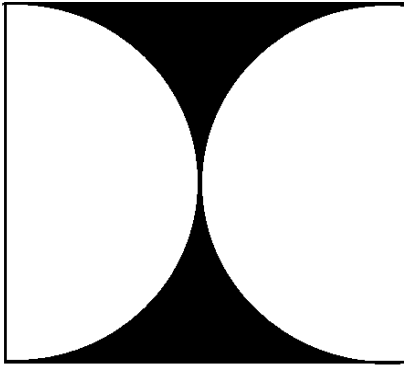   A) 11400 tg
   B) 12000 tg
   C) 12800 tg
   D) 9600 tg
   E) 12200 tg

12. Sun shine makes $30°$ with a ground as shown in the picture bellow. If the distance between point on the ground A and building is 20 m, find the height (m) of the buildings.

A) $25\sqrt{3}$

B) 40

C) $20\sqrt{3}$

D) $\dfrac{20\sqrt{3}}{3}$

E) $40\sqrt{3}$

13. Two acid mixtures are given. The percentage of first mixture is 20% and percentage of second mixture is 30%. How much of each should be taken to make 28% acid with total volume of 50 liters?

A) 10 L. and 40 L. respectively

B) 20 L. and 30 L. respectively

C) 5 L. and 45 L. respectively

D) 15 L. and 35 L. respectively

E) 25 L. and 25 L. respectively

14. Dilnaz made by 3-D print a cube with $8\sqrt{3}$ cm diagonal. She increased its height by 5cm. What will be the diagonal of new figure (right-rectangular parallelepiped)?

A) $\sqrt{297}$ cm

B) 125 cm

C) $\sqrt{199}$ cm

D) 250 cm

E) 123.5 cm

15. Two semicircles are inscribed in a square as shown in the picture. Find area of painted region if side of square is 8 cm.

A) $(24\pi - 8)cm^2$

B) $(64 - 8\pi)cm^3$

C) $(64 - 64\pi)cm^2$

D) $(64 - 16\pi)cm^2$

E) $(64 - 8\sqrt{3})\pi cm^2$