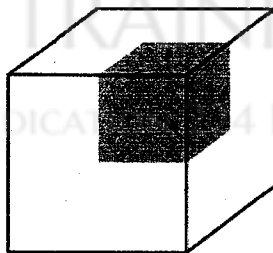


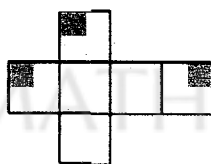
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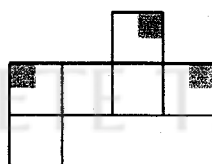
1. Which option below cannot be folded as the cube in the picture?



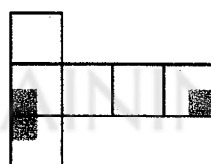
(A)



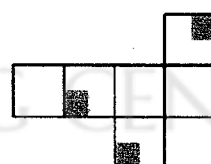
(B)



(C)



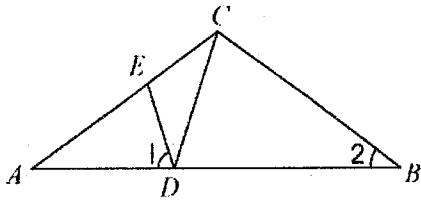
(D)



2. How many integers  $x$ 's can make  $\frac{9x + 5}{3x - 1}$  an integer?

- (A) 3      (B) 4      (C) 5      (D) 6

3. As shown below, points  $D$  and  $E$  are on  $\overline{AB}$  and  $\overline{AC}$ , respectively. Suppose  $\overline{AC} = \overline{BC} = \overline{BD}$ ,  $\overline{AD} = \overline{AE}$  and  $\overline{DE} = \overline{CE}$ , find  $\angle 1 - \angle 2$ .



- (A)  $18^\circ$    (B)  $20^\circ$    (C)  $36^\circ$    (D)  $40^\circ$

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4. Set  $a$  and  $b$  to be real numbers  $|a| + a + b = 8$ , and  $a + |b| - b = 12$ . Find  $[a + b]$ . ( $[x]$  represents the largest integer that is not larger than  $x$ )  
 (A) 2   (B) 10   (C) -6   (D) 3

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5. Set  $p, q, r$  and  $s$  to be four distinct prime numbers, and  $s$  is a 1-digit prime number. If  $pqr + s = 2022$ , find the value of  $p + q + r + s$ .

(A) 56    (B) 84    (C) 122    (D) 680

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6.  $\frac{\frac{2}{\frac{2}{2+1} + 1} + 1}{1 + \frac{2}{1 + \frac{2}{2+1}}} = \frac{p}{q}, (p, q) = 1, p + 2q = ?$

(A) 75    (B) 84    (C) 85    (D) 89

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7. Divide numbers 1, 2, 3, 4, 5, 6, 7, 8 and 9 into three groups, and each forms a 3-digit number without repetition. Suppose the largest 3-digit number is 3 times the smallest 3-digit number, and the second largest 3-digit number is 2 times the smallest 3-digit number. How many groups of number combination satisfy the conditions above?
- (A) 1    (B) 2    (C) 3    (D) 4

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8. Tom and Jerry play a game. Every round, each of them plays a card from their hand. The one with a larger number wins 1 point. If it is a tie, both of them will not score. Suppose each card can only be used once, after five rounds, how many scoring ways are there?

Tom    

21
----

22
----

24
----

25
----

28
----

Jerry    

20
----

22
----

23
----

24
----

27
----

- (A) 12    (B) 11    (C) 10    (D) 9

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9.  $\left| \frac{1}{x-y} - \frac{1}{x+y} - \frac{1}{3} \right| + \left| \frac{2}{x-y} + \frac{3}{x+y} - \frac{3}{2} \right| = 0$ ,  $x + 3y = ?$   
 (A) 10      (B) 8      (C) 7      (D) 6

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10. Start from the 'W' in the upper left corner, a mouse follows the route of "WMI 2022" from one square to the next square with a common side. How many different routes are there to walk these 7 squares?

W	M	I	2	
M	I	2	0	
I	2	0	2	2
2	0	2	2	
		2		

- (A) 36      (B) 40      (C) 46      (D) 48

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