

### Reasoning Ability

**Directions (1-5):** Study the following information carefully and answer the questions given below.

There are eight units placed one above the other in a single stack. Each unit contains a book and some boxes. The lowermost unit is numbered as 1 and the unit immediately above it is numbered as 2 and so on. Eight different books viz. L, M, N, O, P, Q, R, and S are placed in each unit, but not necessarily in the same order. There is a certain number of boxes which are placed one above the other in each unit and the total height of each unit is between 20cm and 75cm with all the boxes in each unit having the same height. No unit has the same height and the same number of boxes.

**Note:**

- i) If the total height of the unit is 12cm and the number of boxes in that unit is 3, then the height of each box will be 4cm.
- ii) The total height of each unit will be the multiple of the number of boxes in that unit. At least two boxes are there in each unit.
- iii) The unit which has an odd number of boxes kept on an even number unit and vice versa. The total number of boxes in each unit is not more than 9.

Book L is placed on an even-numbered unit but below unit number five. Only two books are placed between L and the unit with a height of 32cm. Book M is placed two units below the unit with five boxes which is kept above the unit with a height of 32cm. The lowermost unit doesn't

have a height of 32 cm. The number of units above book M is the same as the number of units below the unit with a height of 52cm. Book S is placed three units above the unit which has 6 boxes. The unit with a height of 35cm is placed two units below the unit which has 9 boxes. The height of the unit with book L is an even number. The number of units between L and the unit which has 7 boxes is the same as the number of units between S and the unit with a height of 45cm. Book N is placed immediately above the unit which has half of the boxes of book P. Book P is placed above Book R which is placed immediately above the unit with a height of 72cm. Book O is placed three units below the unit which has 3 boxes. Book Q does not have the lowest number of boxes. The height of the unit with book S is 2cm more than the unit which has 4 boxes. One of the units is 24cm in height. The height of the Unit with book S is less than the height of the Unit with book M.

**1. Which of the following book has maximum boxes along with it?**

- a) Q
- b) R
- c) The book which is kept immediately below S
- d) M
- e) The book which is kept immediately above O

**2. What is the total number of boxes of the unit with books O, M, and S?**

- a) 9

- b) 14
- c) 12
- d) 10
- e) 8

3. How many books are kept above the unit with a height of 24cm?

- a) One
- b) Two
- c) Three
- d) Four
- e) More than four

4. What is the height of unit 6?

- a) 30cm
- b) 45cm
- c) 72cm
- d) 35cm
- e) None of these

5. Which of the following statement is true?

- a) Book S kept on an even-numbered unit
- b) No unit is there between L and N
- c) Book R has 2 boxes
- d) The height of the unit which has book S is 32cm
- e) All statements are true

**Directions (6-10):** Study the following information carefully and then answer the questions given below.

There are six units placed one above the other in a stack. Each unit contains some books viz. - A, B, C, D, E, and F and some different number of

boxes. The lowermost unit is numbered as 1, and the unit immediately above it is numbered as 2, and so on till the topmost unit is numbered as 6. The total height of each unit is different and is between 20 to 60cm. The height of all the boxes in each unit is the same.

**Note:** If the height of the unit is 25cm, and it contains 5 boxes, then the height of each box must be 5cm each. No two units have the same height and the same number of boxes. At least 3 and not more than 9 boxes are kept in each unit. Book A is kept in an even numbered unit and placed immediately below the unit which has 7 boxes. The number of units above the unit which contains book A is one more than the number of units below the unit whose height is 32cm. Book D is kept three units above the unit whose height is 45cm. The height of the unit which contains book D is 9cm less than the height of the unit which contains book B. The unit which contains book E contains 5 boxes more than the number of boxes in the unit at the lowermost position. Two units are placed between the unit which contains book E and the unit whose height is 28cm. The number of boxes in the unit which contains book E is twice the number of boxes kept in the unit which is kept immediately above the unit which contains book F. The number of boxes in the unit which contains book A is not 4. The unit which contains book E is neither kept adjacent to the unit which contains book A nor the unit which contains 6 boxes. The height of the unit which contains book E is 16cm less than the height of the unit which contains 6 boxes.

The unit which contains book C also contains 9 boxes. The height of the unit which contains book B is 12cm less than the height of the unit which contains book C.

**6. Which of the following unit is immediately above the unit which contains book E?**

- a) The unit whose height is 45cm
- b) The unit which contains book F
- c) The unit which contains 3 boxes
- d) The unit which contains book A
- e) None of these

**7. What is the sum of the height of all the units at an even numbered position?**

- a) 105cm
- b) 113cm
- c) 104cm
- d) 110cm
- e) None of these

**8. Which of the following unit contains book C?**

- a) The unit whose height is 45cm
- b) The unit placed immediately below the unit which contains book F
- c) The unit placed immediately above the unit which contains book E
- d) The unit which contains 6 boxes

e) Either A or C

**9. How many units are placed above the unit which contains book F?**

- a) As many units placed below the unit whose height is 32cm
- b) As many units placed between the unit which contains 3 boxes and the unit which contains book E
- c) As many units placed between the unit whose height is 24cm and the unit which contains book C
- d) Either A or B
- e) Either A or C

**10. Which of the following statement is not true with respect to the final arrangement?**

- a) The unit which contains book E is placed at unit number 2
- b) More than two units are placed above the unit whose height is 48cm
- c) Only three units are placed below the unit which contains 6 boxes
- d) The unit which contains book A and book C are placed together
- e) All the above statements are true

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**Answer Key with Explanation**

Directions (1-5):

- 1. Answer: E
- 2. Answer: D
- 3. Answer: C
- 4. Answer: B
- 5. Answer: A

Final Arrangement

Units	Books	No of boxes ( height)
8	S	5 (30cm)
7	P	8(32cm)
6	M	3 (45cm)
5	R	6 (24cm)
4	L	9(72cm)
3	O	2(52cm)
2	N	7 (35cm)
1	Q	4 (28cm)

We have,

- Book L is placed on an even-numbered unit but below unit number five. Only two

books are placed between L and the unit with a height of 32cm.

- Book M is placed two units below the unit with five boxes which is kept above the unit with a height of 32cm.
- The lowermost unit doesn't have a height of 32 cm

From the above condition, there are three possibilities.

	Case-1		Case-2		Case-2a	
Units	Books	No of boxes ( height)	Books	No of boxes ( height)	Books	No of boxes ( height)
8		5		5		
7		(32cm)				
6	M		M			5
5				(32cm)		(32cm)
4	L				M	
3						
2			L		L	
1						

Again we have,



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- The number of units above book M is the same as the number of units below the unit with a height of 52cm.
- Book S is placed three units above the unit which has 6 boxes.

From the above condition, case-2a gets eliminated.

Units	Case-1		Case-2		<del>Case-2a</del>	
	Books	No of boxes ( height)	Books	No of boxes ( height)	Books	No of boxes ( height)
8	S	5		5		
7		(32cm)				
6	M		M			5
5		6		(32cm)		(32cm)
4	L		S		M	
3		(52cm)		(52cm)		
2			L		L	
1				6		

Again we have,

- The unit with a height of 35cm is placed two units below the unit which has 9 boxes. The height of the unit with book L is an even number.
- The number of units between L and the unit which has 7 boxes is the same as the number of units between S and the unit with a height of 45cm

Units	Case-1		Case-2	
	Books	No of boxes ( height)	Books	No of boxes ( height)
8	S	5		5
7		(32cm)		
6	M	(45cm)	M	9 (45cm)
5		6		(32cm)
4	L	9	S	7 (35cm)
3		(52cm)		(52cm)
2		7 (35cm)	L	
1				6

Again we have,

- Book N is placed immediately above the unit which has half of the boxes of book P.
- Book P is placed above Book R which is placed immediately above the unit with a height of 72cm.
- Book O is placed three units below the unit which has 3 boxes.
- Book Q does not have the lowest number of boxes. The height of the unit with book S is 2cm more than the unit which has 4 boxes.

From the above condition, case2 gets eliminated.

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	Case-1		<del>Case-2</del>	
Units	Books	No of boxes ( height)	Books	No of boxes ( height)
8	S	5	N	5
7	P	8(32cm)		
6	M	3 (45cm)	M	9 (45cm)
5	R	6		(32cm)
4	L	9(72cm)	S	7 (35cm)
3	O	2(52cm)		(52cm)
2	N	7 (35cm)	L	3
1	Q	4		6

Again we have,

- One of the units is 24cm in height.
- The height of the Unit with book S is less than the height of the Unit with book M.

From the above condition, case1 shows the final arrangement.

	Case-1	
Units	Books	No of boxes ( height)
8	S	5 (30cm)
7	P	8(32cm)
6	M	3 (45cm)
5	R	6 (24cm)
4	L	9(72cm)
3	O	2(52cm)
2	N	7 (35cm)
1	Q	4 (28cm)

Directions (6-10):

6. Answer: A

7. Answer: C

8. Answer: E

9. Answer: A

10. Answer: B

Case (2)		
Unit	Book	Height
6	D	(24cm)4
5	F	(28cm) 7
4	A	(48cm)6
3	C	(45cm) 9
2	E	(32cm) 8
1	B	(33cm) 3

We have:

- Book A is kept in an even numbered unit and placed immediately below the unit which has 7 boxes.
- The number of units above the unit which contains book A is one more than the number of units below the unit whose height is 32cm.

That means, in case (1), book A is kept at unit number 2, in case (2), book A is kept at unit number 4.

- Book D is kept three units above the unit whose height is 45cm.
- The height of the unit which contains book D is 9cm less than the height of the unit which contains book B.

Since, the height of the unit which contains book D is 9cm less than the height of the unit which contains book B, and if the height of the unit which contains book D is 32cm, thus the height



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of the unit which contains book B must be 41cm, and at least 3 boxes must be in each unit, thus the height of the box which contains book D can't be 32cm.

That means, in case (1), the unit which contains book D is kept at unit number 5, in case (2), the unit which contains book D is kept at unit number 6.

Based on the above given information we have:

Case (1)			Case (2)		
Unit	Book	Height	Unit	Book	Height
6			6	D	
5	D		5		7
4		32cm	4	A	
3		7	3		45cm
2	A	45cm	2		32cm
1			1		

Again, we have:

- The unit which contains book E contains 5 boxes more than the number of boxes in the unit at the lowermost position.
- Two units are placed between the unit which contains book E and the unit whose height is 28cm.
- The number of boxes in the unit which contains book E is twice the number of boxes kept in the unit which is kept immediately above the unit which contains book F.
- The number of boxes in the unit which contains book A is not 4.

- The unit which contains book E is neither kept adjacent to the unit which contains book A nor the unit which contains 6 boxes.

Since, the number of boxes in the unit which contains book E is five more than the unit which is kept at the lowermost unit, thus the only possible number of boxes of the unit which contains book E must be either 9 or 8.

But the number of boxes in the unit which contains book E is twice the number of boxes kept immediately above the unit which contains book F, thus only the possible number of boxes of the unit which contains book E must be 8.

That means, in case (1), book E is kept at unit number 6, in case (2), book E is kept at unit number 2.

Based on the above given information we have:

Case (1)			Case (2)		
Unit	Book	Height	Unit	Book	Height
6	E	8	6	D	4
5	D		5	F	(28cm) 7
4	F/	32cm	4	A	
3	F/	(28cm)7	3		45cm
2	A	45cm	2	E	(32cm) 8
1		3	1		3

Again, we have:

- The height of the unit which contains book E is 16cm less than the height of the unit which contains 6 boxes.

Since, the unit which contains 6 boxes and the unit which contains book E are not placed together, thus case (1) is not valid.

- The unit which contains book C also contains 9 boxes.
- The height of the unit which contains book B is 12cm less than the height of the unit which contains book C.

That means, book C is kept at unit number 3, and the height of the unit which contains book B is 33cm.

Since, the height of the unit which contains book D is 9cm less than the height of the unit which

contains book B, thus the height of the unit which contains book D must be 24cm.

Based on the above given information we have:

<del>Case (1)</del>			Case (2)		
Unit	Book	Height	Unit	Book	Height
6	E	8	6	D	(24cm)4
5	D	6	5	F	(28cm) 7
4	F/	32cm	4	A	(48cm)6
3	F/	(28cm)7	3	C	(45cm) 9
2	A	45cm	2	E	(32cm) 8
1		3	1	B	(33cm) 3

