GME MODEL QUESTION PAPER

Note:

Please note that you will find sample question/previous years questions below. Each section will have a sample of 30 questions so as to give you an idea. Correct answers are highlighted or specified below the question for your reference.

Section A: Mechanical Engineering

1) In a reversible cycle, the entropy of the system

(a) Increase (b) decreases (c) does not change

(d) first increases and then decreases.

(e) depends on the properties of working substance.

2) A frictionless heat engine can be 100% efficient only if its exhaust temperature is

(a) equal to its input temperature

(b) less than its input temperature

(c) 0°C

(d) 0K

3) kelvin-plank's law deals with.

(a) Conservation of energy

(b) conservation of heat

(c) conservation of mass

(d) conservation of heat into work.

(e) conservation of work into heat.

4) when a liquid boils at constant pressure, which of the following parameter increases

(a) temperature (b) latent heat of vaporization

(c) kinetic energy (d) entropy

5) The work done by a closed system will increase when the value of polytropic index n

(a) increases (b) decreases

(c) first decreases and then increases

(d) first increases and then decreases.

6) The cycle in which heat is supplied at constant volume and rejected at constant pressure is known as

(a) otto cycle (b) Dual cycle

(c) Atkinson cycle (d) Stirling cycle.

7) A definite area or space where some thermodynamic process takes place is known as

(a) thermodynamic system (b) thermodynamic cycle.

(c) thermodynamic process (d) thermodynamic law.

8) Which of the following is an intensive property of a thermodynamic system?

(a) volume (b) temperature (c) mass

(d) Energy

9) The characteristic equation of gases $PV = mRT$ holds good for

(a) monoatomic gases (b) diatomic gas

(c) real gases (d) ideal gas.

10) A gas which obeys kinetic theory perfectly is known as

(a) monoatomic gas (b) diatomic gas

(c) real gas (d) pure gas

(e) perfect gas.

11) The specific speed of a turbine is given by

(a) $N_S = \frac{N\sqrt{P}}{H^{3/4}}$ (b) $N_S = \frac{N\sqrt{Q}}{H^{3/4}}$

(c) $N_S = \frac{N\sqrt{P}}{H^{5/4}}$ (d) $N_S = \frac{N\sqrt{P}}{H^{3/2}}$

12) A fluid flow is represented by the velocity field $\vec{V} = ax\hat{i} + ay\hat{j}$ where a is a constant. The equation of stream line passing through a point (1, 2) is

(a) $x - 2y = 0$ (b) $2x + y = 0$ (c) $2x - y = 0$

(d) $x + 2y = 0$.

13) For high head and low discharge, the suitable turbine is

(a) Pelton (b) Francis (c) Kaplan

(d) None of the above.

14) Streamlines, path lines and streak lines are ~~vectica~~ virtually identical for

(a) uniform flow (b) flow of ideal fluids
(c) steady flow (d) non uniform flow.

15) The value of kinetic energy correction factor for the viscous flow through a circular pipe is

(a) 1.33 (b) 1.5 (c) 2.0 (d) 2.25

16) In a flow field the stream lines and equipotential lines

(a) are parallel (b) cut at any angle
(c) are orthogonal every where in the field
(d) cut orthogonal except at the stagnation points.

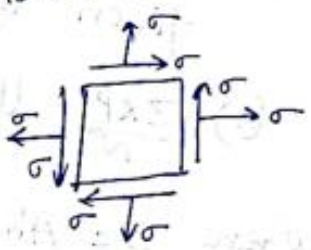
17) The velocity distribution in laminar flow through circular pipe, follows the

(a) parabolic law (b) linear law
(c) logarithmic law (d) none of the above

20) Two pipes of uniform section but different diameters carry water at the same volumetric flow rate. Water properties are the same in the two pipes. The Reynolds number, based on the pipe diameter

(a) is the same in the both pipes
(b) is large in the narrow pipe
(c) is smaller in the narrower pipe
(d) depends on the pipe material.

21) The maximum principal stress for the stress state shown in fig is



(a) σ (b) 2σ (c) 3σ
(d) 1.5σ

22) The friction circle of a bearing is having radius equal to

(a) r (b) $r\cos\phi$ (c) $r\sin\phi$ (d) $r\tan\phi$

where r = Radius of shaft and
ϕ = Angle of friction.

23) If failure in shear along 45° planes is to be avoided, then a material subjected to uniaxial tension should have its shear strength equal to at least

(a) tensile strength (b) compressive strength
(c) half the difference between the tensile and compressive strengths
(d) half the tensile strength.

24) The bearing characteristics number is given by

(a) $\frac{Z \times P}{N}$ (b) $\frac{Z \times N}{P}$ (c) $\frac{P}{Z \times N}$ (d) $\frac{Z}{P \times N}$

where Z = Absolute viscosity of lubricant in centipoise,
N = speed and
P = pressure in N/mm^2

25) If the rotating mass of a rim type flywheel is distributed on another rim type flywheel whose mean radius is half mean radius of the former, the energy stored in the latter at the same speed will be

(a) four times the first one (b) Same as the first one
(c) one-fourth of the first one (d) one and half times the first one.

26) A metal pipe of 1m drameter is filled with a fluid having a pressure of 10 kg/cm². If the permissible tensile stress in the metal is 200 kg/cm², then the thickness of the metal required for making the pipe would be

(a) 5mm (b) 10mm (c) 20mm (d) 25mm

27) A vertical shaft of dia. 150mm carries a vertical load of 20kN and rest flat foot-step bearing. The shaft is rotating at 100 r.p.m and $\mu = 0.045$. For uniform pressure distribution, the frictional torque will be

(a) 25Nm (b) 35Nm (c) 45Nm (d) 55Nm

28) If the bearing efficiency of a riveted joint is 75 percent, then the ratio of rivet hole diameter to the pitch is equal to

(a) 0.2 (b) 0.25 (c) 0.50 (d) 0.6

29) For design purpose, the value of Sommerfield number should be

(a) 10^5 (b) 1.43×10^7 (c) 1.43×10^9 (d) 1.43×10^{15}

30) A double fillet welded joint with parallel weld of length L and leg B is subjected to a tensile force P, Assuming uniform stress distribution, the shear stress in the weld is given by

(a) $\frac{\sqrt{2}P}{BL}$ (b) $\frac{P}{2BL}$ (c) $\frac{P}{\sqrt{2}BL}$ (d) $\frac{2P}{BL}$

Section B – General Aptitude

1.

113. The number 367505*8 is completely divisible by 8. What is the smallest whole number in place of *?

A. 1 B. 3

C. 2 D. 4

Hide Answer Discuss

answer with explanation

Answer: Option C

2.

7. Which of the following fractions is greater than $\frac{3}{5}$ and less than $\frac{6}{7}$?

A. $\frac{1}{2}$ B. $\frac{7}{8}$

C. $\frac{2}{3}$ D. $\frac{1}{3}$

Hide Answer Discuss

answer with explanation

Answer: Option C

3.

44. What least number should be subtracted from 13601 such that the remainder is divisible by 87 ?

A. 28 B. 27

C. 29 D. 30

Hide Answer Discuss

answer with explanation

Answer: Option C

4.

4. The captain of a cricket team of 11 members is 26 years old and the wicket keeper is 3 years older. If the ages of these two are excluded, the average age of the remaining players is one year less than the average age of the whole team. Find out the average age of the team.

A. 21 years
B. 23 years
C. 24 years
D. 20 years

Hide Answer Discuss

answer with explanation

Answer: Option B

5.

17. A batsman makes a score of 87 runs in the 17th innings and thus increases his average by 3. What is his average after 17th innings?

A. 35
B. 40.5
C. 39
D. 42

Hide Answer Discuss

answer with explanation

Answer: Option C

6.

21. How many litres of pure acid are there in 8 litres of a 20% solution?

A. 1.6 litres
B. 1.4 litres
C. 1 litres
D. 2 litres

Hide Answer Discuss

answer with explanation

Answer: Option A

7.

2. If A = x% of y and B = y% of x, then which of the following is true?

A. None of these
B. A is smaller than B.
C. Relationship between A and B cannot be determined.
D. If x is smaller than y, then A is greater than B.
E. A is greater than B.

Hide Answer | Discuss

answer with explanation

Answer: Option A

8.

6. The price of commodity P increases by 40 paise every year, while the price of commodity Q increases by 15 paise every year. If in 2001, the price of commodity P was Rs. 4.20 and that of Q was Rs. 6.30, in which year commodity P will cost 40 paise more than the commodity Q ?

A. 2011 B. 2010

C. 2008 D. 2009

Hide Answer Discuss

answer with explanation

Answer: Option A

9.

27. The fraction $101\frac{27}{100000}$ in decimal for is

A. ○ **.01027**

B. ○ **.10127**

C. ○ **101.00027**

D. ○ **101.000027**

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

Solution:

$$101\frac{27}{100000}$$
$$= 101 + \frac{27}{100000}$$
$$= 101 + .00027$$
$$= 101.00027$$

10.

13. A and B can finish a work 30 days if they work together. They worked together for 20 days and then B left. A finished the remaining work in another 20 days. In how many days A alone can finish the work?

A. 30 B. 50

C. 60 D. 40

Hide Answer Discuss

answer with explanation

Answer: Option C

11.

16. P, Q and R can complete a work in 24, 6 and 12 days respectively. The work will be completed in --- days if all of them are working together.

A. 3 3/7 B. 2

C. 5 D. 4 1/4

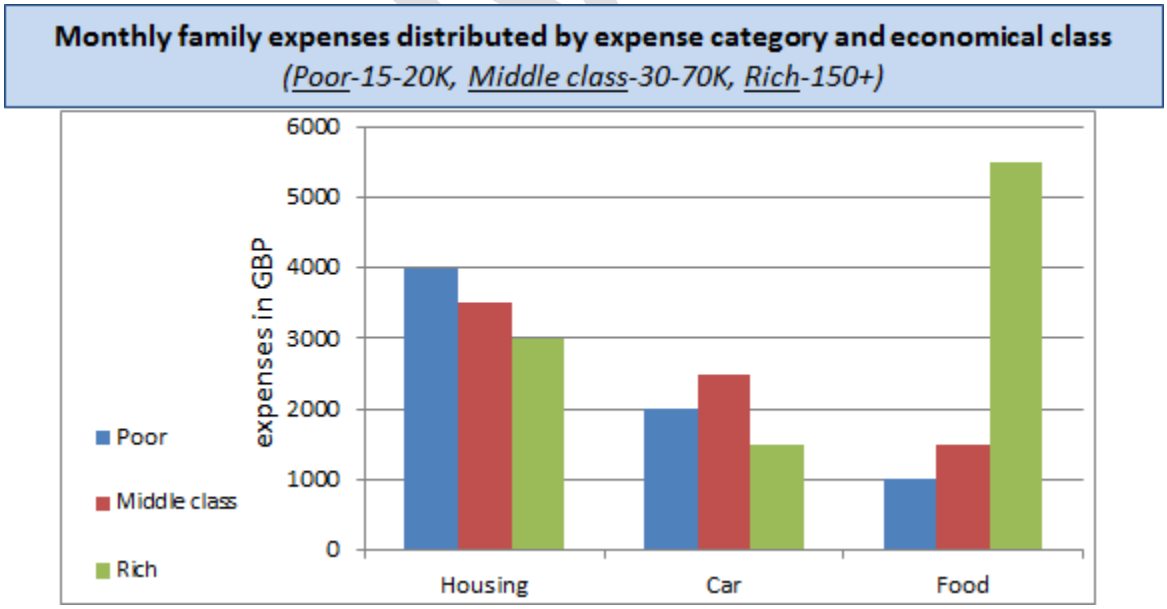
Hide Answer Discuss

answer with explanation

Answer: Option A

12.

Study the Graphical Representation and choose the best answer option for the question :



Rich families spend _____ of money on food as poor and middle class families combined.

A. More than twice the amount

B. An equal amount

C. More than three times the amount

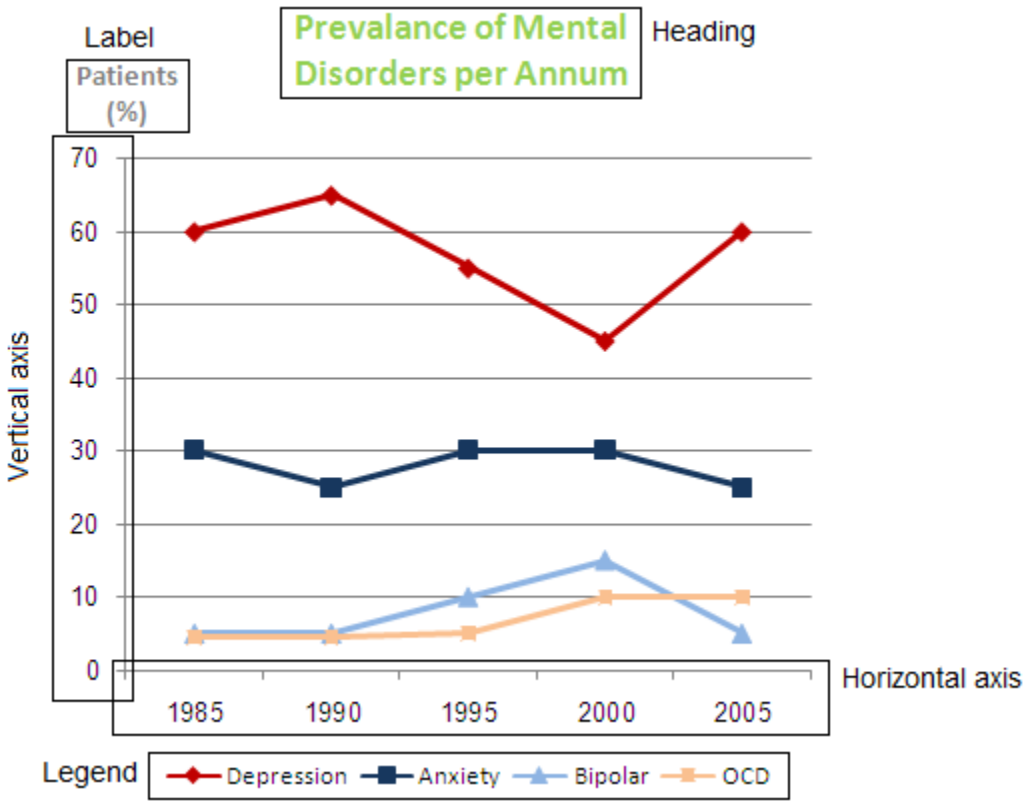
D. Half the amount

Answer and explanation

Rich families spend £5,500 monthly on food, whereas Poor families spend £1000 and middle class families spend £1,500. Combined poor and middle class families spend £2,500 on food, which is less than half the amount spent by the rich families. Therefore, rich families spend more than twice (but less than 3 times) as much money on food than poor and middle class families spend combined.

13.

Study the Graphical Representation and choose the best answer option for the question :



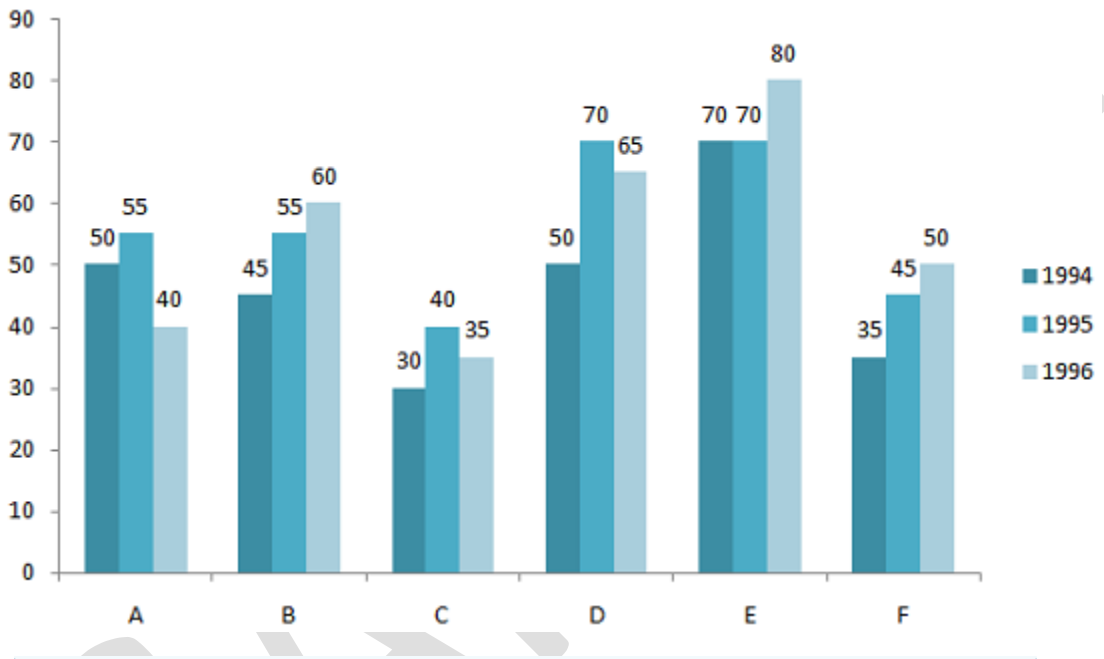
Question : In which year were the percentage of depression patients were equal to sum of the percentage patients of Anxiety and Bipolar mental disorder.

Options :

A. 1985
B. 1995
C. 2000
D. 2005

Correct Answer : C

14. Study the following graph carefully and answer the questions that follow:
Production of steel by different companies in three consecutive years (in lakh tonnes).



102. What is the percentage decline in production by company C from 1995 to 1996?

A. 5%
B. 20%
C. 15%
D. 12.50%
E. None of these

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Answer & Explanation

Answer: Option D

Explanation:

Percentage decline = (40 – 35)/40 * 100 = 12.50%.

15.

4. Inspite of our best efforts, we failed to . . . . . any new facts from him.

A. ○ elicit

B. ○ evoke

C. ○ eject

D. ○ enlist

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A
Solution:
Inspite of our best efforts, we failed to **elicit** any new facts from him.

16.

Choose the correct meaning of the underlined idiom/phrase in the sentence:

1. The detective *left no stone unturned* to trace the culprit.

A. ○ took no pains

B. ○ did very irrelevant things

C. ○ resorted to illegitimate practices

D. ○ used all available means

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D
Solution:
left no stone unturned: try every possible course of action in order to achieve something.

Comprehension

Holi celebrations start on the night before Holi with a Holika Dahan where people gather, perform religious rituals in front of the bonfire, and pray that their internal evil be destroyed the way Holika, the sister of the demon king Hiranyakashipu, was killed in the fire. The next morning is celebrated as

Rangwali Holi – a free-for-all festival of colours, where people smear each other with colours and drench each other. Water guns and water-filled balloons are also used to play and colour each other. Anyone and everyone is fair game, friend or stranger, rich or poor, man or woman, children and elders. The frolic and fight with colours occurs in the open streets, open parks, outside temples and buildings. Groups carry drums and other musical instruments, go from place to place, sing and dance. People visit family, friends, and foes to throw coloured powders on each other, laugh and gossip, then share Holi delicacies, food and drinks. Some customary drinks include bhang (made from cannabis), which is intoxicating. In the evening, after sobering up, people dress up and visit friends and family.

17. Why is Holika Dahan performed?

a. Because it is quite cold and everyone loves bonfire

b. Because it symbolizes the end of destruction of the evil of our foes

c. Because it symbolizes the end of destruction of our internal evil

d. Because Holika was king Hiranyakashipu's sister

Answer: C

18. Choose the statement(s) that summarize the entire passage

i. There are two types of Holi – Holika Dahan & Rangwali Holi

ii. People do not celebrate it with their foes

iii. Food and Drinks are the heart of Holi celebrations

iv. Holi symbolizes the destruction of our inner evil and demons

a. (i), (ii), (iii), (iv)

b. (i), (ii), (iv)

c. (i), (iii), (iv)

d. (i), (ii), (iii)

Answer : C

19. Which word in the passage means "traditional"?

a. Customary

b. Frolic

c. Celebrations

d. None of the above

Answer: A

20. Describe the type of adjective of the highlighted word -

"People visit family, friends and foes to throw coloured powders on each other, laugh and gossip, then share Holi delicacies, food and drinks."

a. adjective of quality

b. adjective of quantity

c. numeral adjective

d. demonstrative adjective

Answer : A

21.

4. Identify the figure that completes the pattern.

A. 1

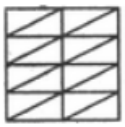
B. 2

C. 3

D. 4

Answer: Option **D**

Explanation:



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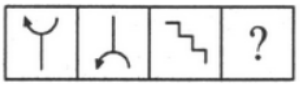
22.

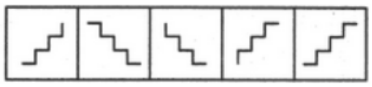
3. Select a suitable figure from the Answer Figures that would replace the question mark (?).

Problem Figures:



(A) (B) (C) (D)

Answer Figures:



(1) (2) (3) (4) (5)

A. 1

B. 2

C. 3

D. 4

E. 5

Answer: Option **A**

Explanation:

The figure gets vertically inverted.

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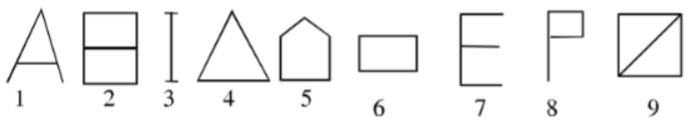
23.

4. A series of figures are given which can be grouped into classes. **Select the group into which the figures can be classified.**



○ A. 1,3,4 2,5,9 6,7,8

○ B. 1,2,3 4,5,6 7,8,9

○ C. 1,5,9 2,4,7 3,6,8

○ D. 3,7,8 1,6,5 4,2,9

View Hint View Answer Discuss in Forum

Correct Option: A

As we can see that ,

Figures **(1), (3) and (4)** : having three sides .

Figures **(2), (5) and (9)** : having five sides .

Figures **(6), (7) and (8)** : having four sides .

As shown in given below .

24.

19. Choose the alternative which is closely resembles the mirror image of the given combination.

QUALITY

A. 1

B. 2

C. 3

D. 4

Answer: Option **C**

Explanation:

No answer description available for this question. Let us discuss.

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25.

20. Choose the alternative which is closely resembles the mirror image of the given combination.

Nu56p7uR

A. 1

B. 2

C. 3

D. 4

Answer: Option **C**

Explanation:

No answer description available for this question. Let us discuss.

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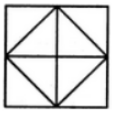
27.

13. Find the number of triangles in the given figure.



A. 8

B. 10

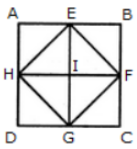
C. 12

D. 14

Answer: Option **C**

Explanation:

The figure may be labelled as shown.



The simplest triangles are AEH, EHI, EBF, EFI, FGC, IFG, DGH and HIG i.e. 8 in number.

The triangles composed of two components each are HEF, EFG, HFG and EFG i.e. 4 in number.

Thus, there are 8 + 4 = 12 triangles in the figure.

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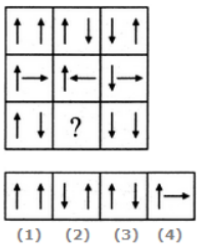
28.

10. Select a suitable figure from the four alternatives that would complete the figure matrix.



A. 1

B. 2

C. 3

D. 4

Answer: Option **A**

Explanation:

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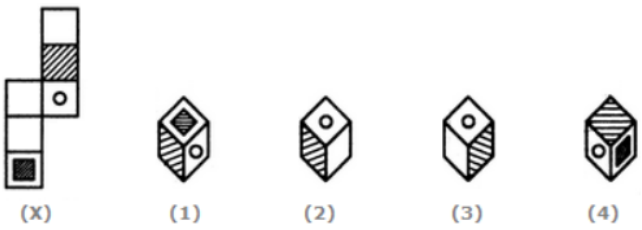
29.

10. Choose the box that is similar to the box formed from the given sheet of paper (X).



A. 1 and 2 only

B. 1, 2 and 4 only

C. 1 and 4 only

D. 1, 2 and 3 only

Answer: Option **B**

Explanation:

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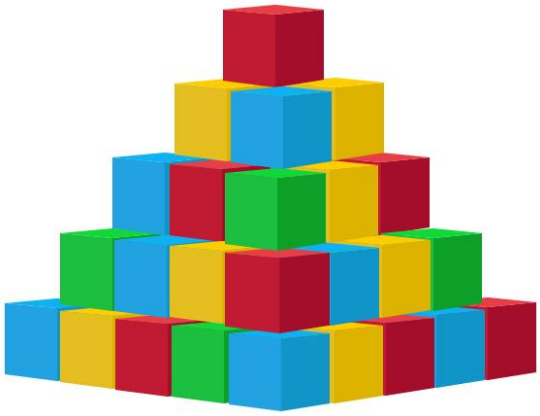
30.

How many blocks are in this tower?



A. **55**

B. **26**

C. **25**

D. **41**

Answer: A

There are 55 blocks in this tower. Make sure to count the blocks in the middle of each level that you can't see. However, if you try to count each one individually, you'll waste a lot of time. Instead, count the blocks on either side and multiply them together to find the total number of blocks on each level.