GMAT Test 3

37 questions – 75 minutes

1. An investment yields an interest payment of $68 each week. If the simple annual interest rate is 7.5%, what is the amount of the investment assuming there only 48 weeks are calculated in a year?

(a) $28,600
(b) $30,430
(c) $34,330
(d) $37,860
(e) $43,520
Principal × percent interest = interest earned
Principle × (0.075)× 1/(12 x 4) = $68. Solve to find the principal (68 × 12 x 4)/0.075= $43,520. The correct answer is D.

2. The flying acrobatic team is made up of 120 airplanes. The team wants to form a rectangular formation with X planes in a row and Y planes in a column. If the number of airplanes in a row is no less than 4 and no more than 30, how many different combinations of rectangular shapes are possible?

(a) 4.
(b) 5.
(c) 6.
(d) 8.
(e) 10.
Use the factors of 120 are: 1x120, 2x60, 3x40, 10x12, 4x30, 5x24, 6x20 and 8x15.
We are looking for combinations of (row x column) that are all between 8 and 30.
The possibilities are: 8x15, 15x8, 4x30, 30x4, 5x24, 24x5, 6x20, 20x6, 10x12 and 12x10.
That is 10 possibilities total. The correct answer is E.

3. A storeowner estimates that the average price of type A products will increase by 25% next year and that the price of type B products will increase by 10% next year. This year, the total amount paid for type A products was $4500 and the total price paid for type B products was $8300. According to the store owner's estimate, and assuming the number of products purchased next year remains the same as that of this year, how much will be spent for both products next year?

(a) $14,755
(b) $15,325
(c) $16,000
(d) $16,225
(e) $17,155
The total estimated amount that will be spent on type A product next year:

$\$4500 \times \frac{125}{100} = \$5625$

The total estimated amount that will be spent on type B product next year:

$\$8300 \times \frac{110}{100} = \$9130$

Giving a total spending of $14,755. The correct answer is A.

4. If a cube has a volume of 64 cubic feet, what is its lateral area?

(a) 16
(b) 24
(c) 48
(d) 64
(e) 96

The side of a cube equals the cubic root of its volume; in this question it is 4. The lateral area of a cube equals the sum of four faces; in this question each face is 16, and the lateral area is four times that, giving 64. The correct answer is B.

5. Is the integer X even?
(1) X is divisible by 7.
(2) X is divisible by 11.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.

The fact that X is divisible by 7 does not help figure out whether it is odd or even, both even and odd numbers could be divisible by 7. The same applies for 11; both even and odd numbers could be divisible by 11. Both statements taken together do not shed a new light on the matter, there could be even and odd numbers that are divisible by 7 and 11. The correct answer is E.

6. Is the product XY divisible by 22?
(1) X is divisible by 4.
(2) Y is divisible by 11.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.

(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
The prime factors of 22 are 2 and 11. Hence, if X is divisible by 4, it is divisible by 2 and if Y is divisible by 11, surely XY is divisible by 22. The correct answer is C.

7. A seven-digit combination lock on a safe has zero exactly three times, does not have the digit 1 at all. What is the probability that exactly 3 of its digits are odd?

(a) 1/2
(b) 1/3
(c) 1/6
(d) 4/16
(e) 9/16
Since three digits are zero, only 4 digits are left for consideration (of which, none is zero). Since 1 does not appear in the numbers, there are 4 even numbers (without 0), and 4 odd numbers (without 1) to choose from. The probability for every digit to be odd is 1/2. There are 4 different ways to arrange 3 odd numbers and one even number in 4 places. Each of these ways has a probability of $(1/2)^4$. And together: $4 \times (1/2)^4 = 4/16$. The correct answer is D.

8. Pipe A fills a swimming pool in 4 hours. Pipe B empties the pool in 6 hours. If pipe A was opened at 8:00 am and Pipe B at 9:00 am, at what time will the pool be full?

(a) 15:00
(b) 17:00
(c) 18:00
(d) 19:00
(e) 20:00
From 8:00 am to 9:00 am, Pipe A, which fills the pool in 4 hours, was open for one hour, filling one quarter of the pool. From 9:00 am, the two Pipes worked together at the rate of: 1/4 - 1/6 = 1/12, one pool in 12 hours. Since the pool was already one quarter full at 9:00 am, it will take only 9 hours to fill the remaining three quarters of the pool. 9 hours from 9:00 am is 18:00. The correct answer is C.

9. What is the value of (a+b)?
(1) $a^2-b^2=133$.
(2) a-b=7.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.

(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Since $a^2-b^2=(a+b)(a-b)$, $133=(a+b)7$, and $(a+b)=19$.
Both statements are needed to solve the question. The correct answer is C.

10. What is the value of X+Z?
(1) X+Y=11
(2) Z+Y=13

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Each statement alone leaves out one of the terms x or z, so we cannot find their sum using any statement alone. Moreover, even combining both statements does not help:

$$\mathbf{x+y=11} \quad \mathbf{z+y=13}$$

$$\mathbf{y=11-x} \quad \mathbf{y=13-z}$$

$$\mathbf{11-x=13-z}$$

$$\mathbf{z-x=13-11}$$

It is only possible to find z-x. The correct answer is E.

11. What was the total amount John earned on his two investments?
(1) John received an annual interest of 5% on one investment and 13% on the other.
(2) John invested a total of $15,000 on both investments.

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(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Knowing the interest alone is not enough to calculate the profit.
Knowing the total amount invested is not enough to calculate the profit, unless we have the interest rate.

Since we have no knowledge of the amount invested in each investment, there is no way to know how much was earned. The correct answer is E.

12. What is the sum of the two smallest integers in a set of different positive integers?
(1) There are 4 integers in the set.
(2) The average of the integers in the set is 3.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
The only two possible sets that have 4 different positive integers and an average of 3 are: [1, 2, 3, 6] and [1, 2, 4, 5]. The sum of the two smallest integers in both sets is always 3. The correct answer is C.

13. In a school with 5 classes, each class has 2 students less then the previous class. How many students are there in the largest class if the total number of students at school is 95?

(a) 17
(b) 19
(c) 21
(d) 23
(e) 25
If X is the number of students in the largest class, then the numbers of students in the other classes are: X-2, X-4, X-6 and X-8. The total number of students is:
$$X+(X-2)+(X-4)+(X-6)+(X-8)=95$$
and
$$5X-20=95\Rightarrow 5X=115\Rightarrow X=23$$
The correct answer is D.

14. A cylindrical ice cream container is half filled with ice cream. A second ice cream container, half the size of the first one is filled to three quarters of its volume with ice cream. What fraction of the total volume of the two containers is filled with ice cream?

(a) 9/12
(b) 7/12
(c) 2/3
(d) 5/6

(e) 15/24

Take 40 litters as the volume of the large container to ease the calculations. Of this volume, 20 litters are ice cream. The volume of the second is 20 litters and 15 litters are ice cream. So, the total volume of both containers is 40+20=60, and the ice cream is 20 + 15=35. Now, 35/60 = 7/12. The correct answer is B.

15. A 48 gallon solution of salt and water is 10% salt. How many gallons of water must be added to the solution in order to decrease the salt to 8% of the volume?

(a) 8
(b) 12
(c) 13
(d) 14
(e) 16

Solve a combined average problem:

$$\frac{48\times 10\% + X\times 0\%}{(48+X)} = 8\%$$

The correct answer is B.

16. Five years ago, the average age of the X students in the class was n. What is their average age now, if Y more students whose average age was also n five years ago, joined the class?

(a) n + 5
(b) n - 5
(c) (x + y)/2 + 5
(d) (x + y)/2 - 5
(e) None of the above

The average age of both groups, x and y was n five years ago. Therefore, it is possible to treat them as one group with that average. Five years later, each student added 5 years to his age, adding 5 to the average of the whole class, and making it n+5. The correct answer is: A.

17. The "Racing magic" takes 120 seconds to circle the racing track once. The "Charging bull" makes 40 rounds of the track in an hour. If they left the starting point together, how many minutes will it take for them to meet at the starting point for the second time?

(a) 3
(b) 6
(c) 9
(d) 12
(e) 15

The rate of the "racing magic" is 40 rounds per hour, or 1 round every 1.5 minutes. The rate of the "Charging bull" is 1 round every 120 seconds, or 1 round every 2 minutes.

The best way to solve such a question is to find the least common denominator between the two rates. At that point, they will meet for the first time, and when multiplied by 2, we find the second time they meet:

$$\frac{1}{2} \leftrightarrow \frac{1}{1.5} = \frac{3}{6} \leftrightarrow \frac{4}{6}$$

They will meet for the first time after 6 minutes and for the second time after 12 minutes. The correct answer is D.

18. If cookies are put in a jar and the jars of cookies are packed in a carton box, how many cookies does one carton box contain?
(1) Every carton box is filed to half its volume.
(2) Twenty cookies are put in each jar, and 12 jars are put in each carton box.

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(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
The first statement gives no information of the number of cookies. The volume of the carton box or the percent of its volume filled, do not help in finding any number. The second statement gives all the information needed in order to find the number of cookies packed in each carton box. The number of cookies per jar, and the number of jars per box are sufficient to calculate real numbers. The correct answer is B.

19. If X and Y are integers, what is the value of X?
(1) 6X = 4 – 9Y
(2) 4/3 – 3Y = 2X

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
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(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
In order to find the value of a term in an equation with two unknowns, two different equations are needed. Since both equations given in statements 1 and 2 are, in fact, the same equation in a different shape, it is impossible to find the value of X or Y. (6X = 4 – 9Y) **ó** (4/3 –3Y = 2X). The correct answer is E.

20. A restaurant spends one quarter of its monthly budget for rent and half of the rest for food and beverages. What percentage of the budget does the restaurant spend for food and beverages?

(a) 23.5%
(b) 32.5%
(c) 35%
(d) 37.5%
(e) 75%

After spending one quarter of the budget on rent, 75% is left, of that half = 37.5% is spent for food and beverages. The correct answer is D.

21. If x oranges cost as much as y peaches do, and peaches cost 24 cents each, how many dollars does each orange cost?

(a) 2400 / (xy)
(b) 24y / x
(c) 100y / 24x
(d) 24y / 100x
(e) y / 24x

Compare x oranges to y peaches at the price of 24 cents per peach. Divide by 100 to receive the amount in dollar:

$$\mathbf{x \times Oranges = y \times Peaches \Rightarrow x \times O = \frac{24y}{100} \Rightarrow O = \frac{24y}{100x}}$$

The correct answer is D.

22. The sum of the volumes of three spheres, each with radius r, equals to the volume of a single sphere with radius R. What is the ratio between r and R?

(a) 1: $\sqrt[3]{3}$
(b) 1: $\sqrt{3}$
(c) 1:2
(d) 1: $\sqrt[3]{2}$
(e) 1:3

Compare the volumes:

$$\mathbf{3 \times \frac{4}{3}\pi r^3 = \frac{4}{3}\pi R^3 \Rightarrow 3 \times r^3 = R^3 \Rightarrow \frac{r}{R} = \frac{1}{\sqrt[3]{3}}}$$

The correct answer is A.

23. If x and y are primes, and x@y=(1/x + 1/y), is x@y < 1?
(1) x=y
(2) x+y=4

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.

(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Since x=y and both are primes, **(1/x + 1/y)** could equal 2/3 when x=y=3, or equal 1 when x=y=2. Therefore, the first statement is not sufficient to solve.
According to the second statement, x+y=4, the only primes to match are x=y=2. Now we know that **(1/x + 1/y)** =1 and the question is solved. The correct answer is B.

24. A ball with a diameter of 10 cm is inscribed inside a rectangular box so that it touches all internal faces of the box. What is the volume trapped between the box and the ball?
(1) The box is a cube
(2) The surface area of the box is 600 cm^2.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Statement (1) tells us that the diameter of the ball is the height of cube, so we can find its volume.
Statement (2) actually tells us that the box is a cube, and the rest is similar to statement one. The correct answer is D.

25. A rectangular box is inscribed inside a cylinder. Both the width and length of the box is 2 cm. What is the volume of the cylinder?
(1) The volume of the box is 20 cm^3.
(2) The radius of the cylinder is $\sqrt{2}$.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
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(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.

Statement (1) can provide us the height of the cylinder while statement (2) gives us data we already can conclude from the question. The correct answer is A.

26. A car travels a distance of 160 miles in 2 hours and 40 minutes, what is the speed of the car in miles per hour?

(a) 54
(b) 60
(c) 84
(d) 116
(e) 120

The car travels 160 miles in 160 minutes, that is 1 mile per minute. So, it travels 60 miles in 60 minutes, or 60 miles per hour. The correct answer is B.

27. If $16^{X+7} = 2^{6X+18}$, what is x?

(a) 9
(b) 8
(c) 7
(d) 6
(e) 5

$16^{X+7} = 2^{6X+18} \Rightarrow 2^{4(X+7)} = 2^{6X+18} \Rightarrow 4(X+7) = 6X+18$

And x=5. The correct answer is: E.

28. In the following sequence: [x, y, z, 5, 7, 16, 28] each number is equal to the sum of the three numbers preceding it. What is x+y?

(a) -5
(b) -1
(c) 1
(d) 5
(e) 6

First find z: z+5+7=16, therefore, z=4. Now, y+4+5=7 making y=(-2). Now we can find x: x+(-2)+4=5, so, x=3. Hence, x+y=3+(-2)=1. The correct answer is: C.

29. John has $1,600 at the beginning of his trip, after spending money, he still has exactly $800 less than he spent on the trip. How much money does John still have?

(a) $200
(b) $400
(c) $600
(d) $800
(e) $1,200

John spends a sum of m dollars and still has m-800 left. So, m+m-800=1,600, and m=$1,200. Therefore, John still has $1,600-$1,200=$400. The correct answer is B.

30. The odds of winning first prize at the casino are 1 to 200. The odds of winning second prize are 1 to 100 and of winning third prize are 1 to 50. If no one person can win more than one of the prizes, what is the probability of not winning the first, second or third prize?

(a) 14/200
(b) 47/50
(c) 193/200
(d) 7/200
(e) 97/200

Calculate the odds of not winning first, second or third prize by deducting the chances of winning first, second or third from 1:

$$1-\left(\frac{1}{200}+\frac{1}{100}+\frac{1}{50}\right)=\frac{193}{200}$$

The correct answer is C.

31. A cube has three of its faces painted half red, half white. The other three faces are completely painted white. What is the ratio between the total red painted and the total white painted areas of the cube?

(a) 1:6
(b) 3:6
(c) 1:2
(d) 1:4.5
(e) 1:3

The red painted area is 3 half faces and the white painted area is a total of 9 half faces. The ratio is, therefore, 1 to 3. The correct answer is: E.

32. There are *X* watermelons of 10 Kg each, and *Y* Watermelons of *R* Kg each. The average weight of a watermelon is 12 Kg. What is the value of R?
(1) There are five heavier watermelons more than lighter watermelons.
(2) The weight of the heavier watermelons in Kg is equal to their number.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.

Statement (1) defines the relationship between X and Y.
Statement (2) defines the relationship between Y and R.
We get the following equations:

10 x X + R x Y = 12 (X+Y), Y=X+5, and Y=R. Now solve and find R. The correct answer is C.

33. The average height of a group of children is 125 cm. If one of the children leaves, the average height drops by 2 cm. how many kids were there originally?
(1) The height of the child who left is twice greater than the height of the shortest child.
(2) The height of the child who left is 130 cm.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Since we don't know how many children there are at all, it won't help us to know the relationship between the child who left and the shortest child.
Statement (2) defines the connection between the sum of the heights before and after the departure and using the change in the sum divided by the new number of children we can find the number of children. The correct answer is B.

34. *P* is the standard deviation of the heights of NBA basketball players. *R* is the standard deviation of the heights of 8 weight lifters. Is the average height of the NBA players greater than the average height of the weight lifters?
(1) R>P
(2) There are 5 basketball players that are taller than the tallest weight lifter, and 2 players that are shorter than the shortest weight lifter.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Since we have no concrete info about the exact heights, or about the value of P and R, we cannot determine whether the NBA players or the weight lifters are taller.
We need more data. The correct answer is E.

35. The average monthly income of 14 younger workers is X, Together with 60 older workers, the average monthly income of the workers rose to Y. what is the average monthly income of the older workers?
(1) The factory's monthly budget for all salaries is 300,000$, which is 10 times the salary budget for the younger workers.
(2) The monthly income of all the workers is 10 times the younger workers income.

(a) Statement (1) BY ITSELF is sufficient to answer the question, but statement (2) by itself is not.
(b) Statement (2) BY ITSELF is sufficient to answer the question, but statement (1) by itself is not.
(c) Statements (1) and (2) TAKEN TOGETHER are sufficient to answer the question, even though NEITHER statement BY ITSELF is sufficient.
(d) Either statement BY ITSELF is sufficient to answer the question.
(e) Statements (1) and (2) TAKEN TOGETHER are NOT sufficient to answer the question, requiring more data pertaining to the problem.
Statement (1) can tell us the value of Y, and the value of X, which is enough to solve this problem.
Statement (2) alone only defines the connection between X and Y. The correct answer is A.

36. One out of every 500 light bulbs are defected. If 2 out of every 10 defected light bulbs have a broken glass and there are 20 broken glass light bulbs in the shipment, how many light bulbs total are there in the shipment?

(a) 2,000
(b) 5,000
(c) 10,000
(d) 50,000
(e) 52,000
Two out of every 10 damaged light bulbs have a broken glass, so if 20 bulbs have a broken glass, there are 100 damaged light bulbs. Since one out of every 500 is damaged, there are 100x500 = 50,000 light bulbs in the shipment. The correct answer is D.

37. If *a* is an even integer and *b* is an odd integer, what must the expression $\frac{a^3b^3}{8}$ be?
(a) Always even
(b) Always odd
(c) Always a fraction
(d) Could be a fraction
(e) Always an integer
Since the even number *a* is raised to the power of 3, it is always divisible by 8. Therefore, the whole expression must be an integer, an even or an odd one. Of course, the expression cannot be a fraction. The correct answer is E.