GMAT 2025 Sample Question Paper 2 with Solutions

Time Allowed :2 Hours 15 Minutes	**Maximum Marks :**205-805	**Total Questions :**64

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The GMAT exam is 2 hours and 15 minutes long (with one optional 10-minute break) and consists of 64 questions in total.
2. The GMAT exam is comprised of three sections:
3. Quantitative Reasoning: 21 questions, 45 minutes
4. Verbal Reasoning: 23 questions, 45 minutes
5. Data Insights: 20 questions, 45 minutes
6. You can answer the three sections in any order. As you move through a section, you can bookmark questions that you would like to review later.
7. When you have answered all questions in a section, you will proceed to the Question Review & Edit screen for that section.
8. If there is no time remaining in the section, you will NOT proceed to the Question Review & Edit screen and you will automatically be moved to your optional break screen or the next section (if you have already taken your optional break).
9. Each Question Review & Edit screen includes a numbered list of the questions in that section and indicates the questions you bookmarked.
10. Clicking a question number will take you to that specific question. You can review as many questions as you would like and can edit up to three (3) answers.

Quantitative Aptitude

1. One hour after Yolanda started walking from X to Y, a distance of 45 miles, Bob started walking along the same road from Y to X. If Yolanda's walking rate was 3 miles per hour and Bob's was 4 miles per hour, how many miles had Bob walked when they met?

(A) 24
(B) 23
(C) 22
(D) 21
(E) 19.5

Correct Answer: (A) 24

Solution:

Step 1: Understanding the Concept:
This is a relative speed problem where two objects are moving towards each other. The key is to account for the head start that one person has. We need to find the point in time and distance where they meet.

Step 2: Key Formula or Approach:
The fundamental formula is **Distance = Rate × Time**.
When two objects move towards each other, their relative speed is the sum of their individual speeds. However, due to the one-hour head start, it's easier to set up an equation where the sum of the distances they travel equals the total distance.
Let t be the time in hours that Bob has been walking.
Since Yolanda started one hour earlier, she has been walking for $t + 1$ hours.

Step 3: Detailed Explanation:
Distance covered by Yolanda = Yolanda's Rate × Yolanda's Time

$$D_{Yolanda} = 3 \times (t + 1)$$

Distance covered by Bob = Bob's Rate × Bob's Time

$$D_{Bob} = 4 \times t$$

They meet when the sum of the distances they have walked equals the total distance between X and Y, which is 45 miles.

$$D_{Yolanda} + D_{Bob} = 45$$

Substituting the expressions for their distances:

$$3(t + 1) + 4t = 45$$

Now, we solve for t:

$$3t + 3 + 4t = 45$$
$$7t + 3 = 45$$
$$7t = 45 - 3$$
$$7t = 42$$
$$t = \frac{42}{7} = 6 \text{ hours}$$

This means Bob walked for 6 hours before they met.
The question asks for the number of miles Bob had walked.

$$D_{Bob} = 4 \times t = 4 \times 6 = 24 \text{ miles}$$

Step 4: Final Answer:
Bob had walked 24 miles when they met. This corresponds to option (A).

Quick Tip

In relative motion problems, carefully note the starting times and directions. A simple approach is to calculate the distance covered by the person who started earlier, subtract it from the total distance, and then solve a simpler problem where they start simultaneously. Here, in the first hour, Yolanda covers 3 miles. The remaining distance is 42 miles. Their combined speed is $3 + 4 = 7$ mph. Time to meet $= 42/7 = 6$ hours. In these 6 hours, Bob walks $6 \times 4 = 24$ miles.

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2. Coins are to be put into 7 pockets so that each pocket contains at least one coin. At most 3 of the pockets are to contain the same number of coins, and no two of the remaining pockets are to contain an equal number of coins. What is the least possible number of coins needed for the pockets?

(A) 7
(B) 13
(C) 17
(D) 22
(E) 28

Correct Answer: (C) 17

Solution:

Step 1: Understanding the Concept:
This is a minimization problem involving number theory and combinatorics. We need to satisfy a set of conditions while making the total sum as small as possible. The key is to use the smallest possible positive integers for the number of coins in each pocket.

Step 2: Key Formula or Approach:
Let the number of coins in the 7 pockets be $p_1, p_2, p_3, p_4, p_5, p_6, p_7$.
The conditions are:
1. Each $p_i \geq 1$.
2. "At most 3 pockets" can have the same number of coins. This means we can have a group of 3 identical pockets, or a group of 2, or no groups (all different).
3. "no two of the remaining pockets" have an equal number of coins.
Our goal is to minimize the sum: $S = \sum_{i=1}^{7} p_i$.

Step 3: Detailed Explanation:
To minimize the total number of coins, we should use the smallest possible integers (1, 2, 3, ...).
Let's analyze the condition "At most 3 pockets are to contain the same number of coins". This gives us the main constraint to build our set of numbers. To minimize the sum, we want to repeat the smallest number (which is 1) as many times as allowed.
The condition allows up to 3 pockets to be the same. So, let's make 3 pockets have the same number of coins. To minimize the total, we should give them the minimum possible number of

coins, which is 1.
Case 1: Three pockets have the same number of coins.
- Three pockets contain 1 coin each: $\{1, 1, 1\}$.
- The remaining $7 - 3 = 4$ pockets must all have different numbers of coins, and they cannot be equal to 1.
- To minimize the sum, we must choose the next smallest integers available: 2, 3, 4, 5.
- So, the distribution of coins in the 7 pockets is $\{1, 1, 1, 2, 3, 4, 5\}$.
- The total number of coins is $1 + 1 + 1 + 2 + 3 + 4 + 5 = 17$.

Let's check other possibilities to be sure this is the minimum.
Case 2: Two pockets have the same number of coins.
- Two pockets contain 1 coin each: $\{1, 1\}$.
- The remaining $7 - 2 = 5$ pockets must all have different numbers of coins, not equal to 1.
- We must choose the next smallest integers: 2, 3, 4, 5, 6.
- The distribution is $\{1, 1, 2, 3, 4, 5, 6\}$.
- The total is $1 + 1 + 2 + 3 + 4 + 5 + 6 = 22$. This is greater than 17.

Case 3: No pockets have the same number of coins (all are different).
- The 7 pockets must contain 7 distinct numbers of coins. To minimize, we choose the smallest positive integers.
- The distribution is $\{1, 2, 3, 4, 5, 6, 7\}$.
- The total is $1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$. This is also greater than 17.

Step 4: Final Answer:
The least possible number of coins is achieved in the first case, which is 17. This corresponds to option (C).

Quick Tip

For minimization problems with integer constraints, always start by using the smallest possible integers (1, 2, 3, ...). Systematically test the different scenarios allowed by the constraints (e.g., 3 same vs. 2 same vs. all different) to find the absolute minimum.

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3. Lloyd normally works 7.5 hours per day and earns \$4.50 per hour. For each hour he works in excess of 7.5 hours on a given day, he is paid 1.5 times his regular rate. If Lloyd works 10.5 hours on a given day, how much does he earn for that day?

(A) \$33.75
(B) \$47.25
(C) \$51.75
(D) \$54.00
(E) \$70.00

Correct Answer: (D) \$54.00

Solution:

Step 1: Understanding the Concept:
This problem requires calculating total earnings based on regular hours and overtime hours, where overtime is paid at a higher rate. We need to separate the total hours worked into these two categories.

Step 2: Key Formula or Approach:
Total Earnings = (Regular Hours $\times$ Regular Rate) + (Overtime Hours $\times$ Overtime Rate)
First, we need to calculate the overtime rate and the number of overtime hours.

Step 3: Detailed Explanation:
1. **Identify the given information:**
- Regular work day: 7.5 hours
- Regular hourly rate: \$4.50 per hour
- Overtime multiplier: 1.5 times the regular rate
- Total hours worked: 10.5 hours

2. **Calculate the overtime hours:**
Overtime Hours = Total Hours Worked - Regular Hours

$$\text{Overtime Hours} = 10.5 - 7.5 = 3 \text{ hours}$$

3. **Calculate the overtime rate:**
Overtime Rate = Regular Rate $\times$ 1.5

$$\text{Overtime Rate} = \$4.50 \times 1.5 = \$6.75 \text{ per hour}$$

4. **Calculate the earnings for regular hours:**
Regular Earnings = Regular Hours $\times$ Regular Rate

$$\text{Regular Earnings} = 7.5 \times \$4.50 = \$33.75$$

5. **Calculate the earnings for overtime hours:**
Overtime Earnings = Overtime Hours $\times$ Overtime Rate

$$\text{Overtime Earnings} = 3 \times \$6.75 = \$20.25$$

6. **Calculate the total earnings for the day:**
Total Earnings = Regular Earnings + Overtime Earnings

$$\text{Total Earnings} = \$33.75 + \$20.25 = \$54.00$$

Step 4: Final Answer:
Lloyd earns \$54.00 for that day. This corresponds to option (D).

Quick Tip

In wage calculation problems, always break down the hours into 'regular' and 'overtime' first. Calculate the pay for each part separately before adding them together to avoid errors. Be careful with multipliers like "1.5 times his regular rate".

Verbal Reasoning

Passage for Questions 1 and 2:
This passage was written in 1984.
It is now possible to hear a recording of Caruso's singing that is far superior to any made during his lifetime. A decades-old wax-cylinder recording of this great operatic tenor has been digitized, and the digitized signal has been processed by computer to remove the extraneous sound, or "noise," introduced by the now "ancient" wax-cylinder recording process.
Although this digital technique needs improvement, it represents a new and superior way of recording and processing sound which overcomes many of the limitations of analog recording. In analog recording systems, the original sound is represented as a continuous waveform created by variations in the sound's amplitude over time. When analog playback systems reproduce this waveform, however, they invariably introduce distortions. First, the waveform produced during playback differs somewhat from the original waveform. Second, the medium that stores the analog recording creates noise during playback which gets added to the recorded sounds.
... as long as the numbers remain recognizable, the original waveform will be reconstructed with little loss in quality. However, because the waveform is continuous, while its digital representation is composed of discrete numbers, it is impossible for digital systems to avoid some distortion. One kind of distortion, called "sampling error," occurs if the sound is sampled (i.e., its amplitude is measured) too infrequently, so that the amplitude changes more than one quantum (the smallest change in amplitude measured by the digital system) between samplings. In effect, the sound is changing too quickly for the system to record it accurately. A second form of distortion is "quantizing error," which arises when the amplitude being measured is not a whole number of quanta, forcing the digital recorder to round off. Over the long term, these errors are random, and the noise produced (a background buzzing) is similar to analog noise except that it only occurs when recorded sounds are being reproduced.

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1. According to the passage, one of the ways in which analog recording systems differ from digital recording systems is that analog systems...

(A) Can be used to reduce background noise in old recordings.
(B) Record the original sound as a continuous waveform.
(C) Distort the original sound somewhat.
(D) Can avoid introducing extraneous and nonmusical sounds.
(E) Can reconstruct the original waveform with little loss in quality.

Correct Answer: (B) Record the original sound as a continuous waveform.

Solution:

Step 1: Understanding the Question:
The question asks for a specific difference between analog and digital recording systems as described in the passage. We need to find a statement that is true for analog systems but not for digital systems, based on the text.

Step 2: Analyzing the Passage for Key Differences:
The passage states:
- **For analog systems:** "In analog recording systems, the original sound is represented as a continuous waveform..."
- **For digital systems:** "...its digital representation is composed of discrete numbers..."
This establishes a clear difference in how the sound is represented.

Step 3: Evaluating the Options:
(A) **Can be used to reduce background noise in old recordings.** The passage describes digital systems being used for this purpose ("processed by computer to remove the extraneous sound"), not analog systems. This is incorrect.
(B) **Record the original sound as a continuous waveform.** This directly quotes the description of analog systems in the passage. The passage contrasts this with digital systems using "discrete numbers". This is a key difference and is correct.
(C) **Distort the original sound somewhat.** The passage mentions that analog systems "invariably introduce distortions". However, it also states, "...it is impossible for digital systems to avoid some distortion." Since both systems cause distortion, this is a similarity, not a primary difference highlighted in the text.
(D) **Can avoid introducing extraneous and nonmusical sounds.** The passage explicitly states the opposite for analog systems: "...the medium that stores the analog recording creates noise during playback...". This is incorrect.
(E) **Can reconstruct the original waveform with little loss in quality.** The passage attributes this quality to digital systems: "...the original waveform will be reconstructed with little loss in quality." This is incorrect for analog.

Step 4: Final Answer:
The most accurate difference described in the passage is that analog systems record sound as a continuous waveform. This matches option (B).

Quick Tip

For "according to the passage" questions, stick strictly to the information provided. The correct answer is often a direct paraphrase or a stated fact from the text. Avoid making inferences or using outside knowledge. Identify the key contrast the author is making between the two subjects.

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2. Which of the following can be inferred from the passage about the digital ap-

proach to the processing of sound?

(A) It was developed in competition with wax-cylinder recording technology.
(B) It has resulted in the first distortion-free playback system.
(C) It has been extensively applied to nonmusical sounds.
(D) It cannot yet process music originally recorded on analog equipment.
(E) It is not yet capable of reprocessing old recordings in a completely distortion-free manner.

Correct Answer: (E) It is not yet capable of reprocessing old recordings in a completely distortion-free manner.

Solution:

Step 1: Understanding the Question:
The question asks us to make a reasonable inference about the digital approach based on the information given in the passage. An inference is a conclusion reached on the basis of evidence and reasoning, not a directly stated fact.

Step 2: Analyzing the Passage for Clues about Digital Technology:
The passage provides several key details about the digital approach:
- It is a "new and superior way of recording".
- "this digital technique needs improvement".
- "...it is impossible for digital systems to avoid some distortion."
- It describes specific digital distortions: "sampling error" and "quantizing error".
- The passage was written in 1984, which provides context for the state of the technology being described.

Step 3: Evaluating the Options:
(A) **It was developed in competition with wax-cylinder recording technology.** The passage describes processing a "decades-old wax-cylinder recording". This implies wax-cylinder technology is much older, and digital technology came much later. They were not contemporaries in competition. This is incorrect.
(B) **It has resulted in the first distortion-free playback system.** This is directly contradicted by the passage, which states "...it is impossible for digital systems to avoid some distortion" and details the types of errors. This is incorrect.
(C) **It has been extensively applied to nonmusical sounds.** The passage's only example is Caruso's singing, which is musical. There is no information to support an inference about its application to nonmusical sounds. This is unsupported.
(D) **It cannot yet process music originally recorded on analog equipment.** The very first sentence describes exactly this: processing a wax-cylinder (an analog format) recording of Caruso's singing. This is incorrect.
(E) **It is not yet capable of reprocessing old recordings in a completely distortion-free manner.** This is a strong inference supported by multiple points in the text: the technique "needs improvement," it's "impossible" to "avoid some distortion," and specific errors like "sampling error" and "quantizing error" exist. Therefore, it cannot be completely distortion-free. This is the correct inference.

Step 4: Final Answer:
The passage clearly indicates that the digital process, while superior, is not perfect and still introduces its own forms of distortion. This supports the inference in option (E).

Quick Tip

In inference questions, look for an answer choice that is not explicitly stated but is strongly suggested by the text. A good inference is a logical extension of the facts given. Eliminate choices that are directly contradicted by the passage or are not supported by any information in the text.

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3. Although migraine headaches are believed to be caused by food allergies, putting patients on diets that eliminate those foods to which the patients have been demonstrated to have allergic migraine reactions frequently does not stop headaches. Obviously, some other cause of migraine headaches besides food allergies must exist. Which of the following, if true, would most weaken the conclusion above?

(A) Many common foods elicit an allergic response only after several days, making it very difficult to observe links between specific foods patients eat and headaches they develop.
(B) Food allergies affect many people who never develop the symptom of migraine headaches.
(C) Many patients report that the foods that cause them migraine headaches are among the foods that they most enjoy eating.
(D) Very few patients have allergic migraine reactions as children and then live migraine-free adult lives once they have eliminated from their diets foods to which they have been demonstrated to be allergic.
(E) Very rarely do food allergies cause patients to suffer a symptom more severe than that of migraine headaches.

Correct Answer: (A) Many common foods elicit an allergic response only after several days, making it very difficult to observe links between specific foods patients eat and headaches they develop.

Solution:

Step 1: Understanding the Argument:
- **Premise:** Eliminating foods to which patients have a *demonstrated* allergic reaction often doesn't stop their migraines.
- **Conclusion:** Therefore, there must be some other cause for migraines besides food allergies.
- **Task:** Weaken the conclusion. This means we need to find an answer that suggests food allergies *could still be the sole cause*, despite the failure of the elimination diet mentioned in the premise.

Step 2: Analyzing the Argument's Logic and Finding the Gap:
The argument assumes that the "demonstrated" allergic reactions are the *only* relevant allergic reactions. The conclusion (that another cause must exist) relies on the premise that the

elimination of known allergens was complete and accurate. If we can show that the process of "demonstrating" or identifying the allergies is flawed, we can argue that the diet failed not because the theory (allergies cause migraines) is wrong, but because the application (the diet itself) was incomplete.

Step 3: Evaluating the Options:
(A) **Many common foods elicit an allergic response only after several days, making it very difficult to observe links...** This directly attacks the gap in the argument. It suggests that the process of "demonstrating" which foods cause an allergic reaction is difficult and likely incomplete. If patients are still unknowingly consuming other trigger foods because the allergic reaction is delayed and hard to pinpoint, then the diet would fail even if food allergies were the only cause. This provides an alternative explanation for the premise and seriously weakens the conclusion that there *must* be another cause.
(B) **Food allergies affect many people who never develop the symptom of migraine headaches.** This is irrelevant. The argument is about people who *do* get migraines, not those who don't.
(C) **Many patients report that the foods that cause them migraine headaches are among the foods that they most enjoy eating.** This might explain why patients find the diet difficult, but it doesn't weaken the conclusion about the cause of migraines.
(D) **Very few patients have allergic migraine reactions as children and then live migraine-free adult lives once they have eliminated from their diets foods...** This describes a group for whom the diet works. If anything, this slightly strengthens the idea that for the other group (in the premise), there might be another cause. It doesn't weaken the conclusion.
(E) **Very rarely do food allergies cause patients to suffer a symptom more severe than that of migraine headaches.** The severity of symptoms is not relevant to the cause of the headaches.

Step 4: Final Answer:
Option (A) provides the strongest reason to doubt the conclusion by showing that the premise (the failure of the diet) does not necessarily lead to the conclusion (another cause must exist).

Quick Tip

To weaken a conclusion in a Critical Reasoning question, look for an answer choice that attacks the assumption linking the premise to the conclusion. Often, this involves providing an alternative explanation for the evidence presented in the premise.

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4. A factory was trying out a new process for producing one of its products, with the goal of reducing production costs. A trial production run using the new process showed a fifteen percent reduction in costs compared with past performance using the standard process. The production managers therefore concluded that the new process did produce a cost savings. Which of the following, if true, casts most doubt on the production managers' conclusion?

(A) In the cost reduction project that eventually led to the trial of the new process, production managers had initially been seeking cost reductions of fifty percent.
(B) Analysis of the trial of the new process showed that the cost reduction during the trial was entirely attributable to a reduction in the number of finished products rejected by quality control.
(C) While the trial was being conducted, production costs at the factory for a similar product, produced without benefit of the new process, also showed a fifteen percent reduction.
(D) Although some of the factory's managers have been arguing that the product is outdated and ought to be redesigned, the use of the new production process does not involve any changes in the finished product.
(E) Since the new process differs from the standard process only in the way in which the stages of production are organized and ordered, the cost of the materials used in the product is the same in both processes.

Correct Answer: (C) While the trial was being conducted, production costs at the factory for a similar product, produced without benefit of the new process, also showed a fifteen percent reduction.

Solution:

Step 1: Understanding the Argument:
- **Premise:** A trial of a new process showed a 15% reduction in production costs.
- **Conclusion:** The new process causes cost savings.
- **Task:** Cast doubt on the conclusion. We need to find information that suggests the 15% cost reduction was caused by something *other than* the new process.

Step 2: Analyzing the Argument's Logic and Finding the Gap:
The argument assumes a causal link: because the cost reduction happened *during* the trial of the new process, the new process *caused* the cost reduction. This is a classic correlation-is-not-causation scenario. To weaken it, we need to introduce a plausible alternative cause for the observed effect (the cost reduction).

Step 3: Evaluating the Options:
(A) **...managers had initially been seeking cost reductions of fifty percent.** The original goal is irrelevant to whether a 15% saving was actually achieved by the process. This doesn't weaken the conclusion.
(B) **...cost reduction...was entirely attributable to a reduction in the number of finished products rejected by quality control.** A reduction in rejected products is a form of cost saving directly related to a production process improvement. This would actually *strengthen* the conclusion by explaining *how* the new process saved money.
(C) **While the trial was being conducted, production costs at the factory for a similar product, produced without benefit of the new process, also showed a fifteen percent reduction.** This is a very strong weakener. It introduces a control group (the similar product) that also experienced the same cost reduction without the new process. This suggests that some other factor, common to the whole factory (like cheaper raw materials, a new factory-wide efficiency program, or lower energy costs), was the real cause of the cost reduction,

not the new process itself.
(D) **...the use of the new production process does not involve any changes in the finished product.** This is irrelevant. The conclusion is about the cost of the *process*, not the design of the product.
(E) **...the cost of the materials used in the product is the same in both processes.** This eliminates one possible source of cost savings (materials) but doesn't weaken the overall conclusion, as the savings could have come from labor, efficiency, energy, etc. It limits the explanation but doesn't undermine the conclusion.

Step 4: Final Answer:
Option (C) provides the most compelling evidence to doubt the conclusion by suggesting that an external factor, and not the new process, was responsible for the cost savings.

Quick Tip

When an argument concludes that X caused Y, a powerful way to weaken it is to show that Y also occurred when X was not present. This introduces an alternative cause and breaks the assumed causal link. This is often called a "control group" argument.

Data Insights

1. If a certain city is losing 12 percent of its daily water supply each day because of water-main breaks, what is the dollar cost to the city per day for this loss?
(1) The city's daily water supply is 350 million gallons.
(2) The cost to the city for each 12,000 gallons of water lost is $2.

(A) Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
(B) Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
(C) BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
(D) EACH statement ALONE is sufficient.
(E) Statements (1) and (2) TOGETHER are NOT sufficient.

Correct Answer: (C) BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

Solution:

Step 1: Understanding the Concept:
This is a Data Sufficiency question. The goal is to determine if the information provided in the statements is sufficient to answer the question, not to find the actual numerical answer itself. We need to find the total dollar cost per day.

Step 2: Analyzing the Question Stem:
The question asks for the total dollar cost of the water loss per day.
From the stem, we know:
Water loss = 12% of the daily water supply.
To find the total cost, we need two key pieces of information:
1. The total volume of water lost per day.
2. The cost per unit volume of water.
Total Cost = (Volume of water lost) × (Cost per unit volume)

Step 3: Detailed Explanation:
Evaluating Statement (1) Alone:
"The city's daily water supply is 350 million gallons."
This statement allows us to calculate the total volume of water lost.

$$\text{Volume Lost} = 12\% \times 350,000,000 \text{ gallons} = 0.12 \times 350,000,000 = 42,000,000 \text{ gallons}$$

However, we do not know the cost of this water. We cannot determine the total dollar cost.
Therefore, Statement (1) alone is not sufficient.

Evaluating Statement (2) Alone:
"The cost to the city for each 12,000 gallons of water lost is $2."
This statement gives us the cost per unit volume.

$$\text{Cost Rate} = \frac{\$2}{12,000 \text{ gallons}}$$

However, we do not know the total daily water supply, so we cannot calculate the total volume of water lost (12% of an unknown number).
Therefore, Statement (2) alone is not sufficient.

Evaluating Statements (1) and (2) Together:
Using both statements, we have all the information needed.
- From Statement (1), the total volume of water lost is 42,000,000 gallons.
- From Statement (2), the cost is $2 for every 12,000 gallons.
We can now calculate the total daily cost:

$$\text{Total Cost} = (\text{Total Gallons Lost}) \times (\text{Cost per Gallon})$$

$$\text{Total Cost} = 42,000,000 \text{ gallons} \times \frac{\$2}{12,000 \text{ gallons}} = \frac{42,000,000 \times 2}{12,000} = \$7,000$$

Since we can find a single, unique value for the total cost, the two statements together are sufficient.

Step 4: Final Answer:
Neither statement is sufficient on its own, but together they provide enough information to solve the problem. This corresponds to option (C).

Quick Tip

In Data Sufficiency problems, first identify exactly what pieces of information are needed to answer the question. For a cost calculation, you almost always need both a quantity (how much?) and a rate (how much per unit?). Check if each statement provides one of these pieces.

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2. Buckets X and Y contained only water and bucket Y was 1/2 full. If all of the water in bucket X was then poured into bucket Y, what fraction of the capacity of Y was then filled with water?
(1) Before the water from X was poured, X was 1/3 full.
(2) X and Y have the same capacity.

(A) Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
(B) Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
(C) BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
(D) EACH statement ALONE is sufficient.
(E) Statements (1) and (2) TOGETHER are NOT sufficient.

Correct Answer: (C) BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.

Solution:

Step 1: Understanding the Concept:
This is a Data Sufficiency problem involving fractions and ratios. We need to determine if we have enough information to calculate the final water level in bucket Y as a fraction of its total capacity.

Step 2: Analyzing the Question Stem:
Let C_X be the capacity of bucket X and C_Y be the capacity of bucket Y.
Let W_X be the initial amount of water in bucket X and W_Y be the initial amount of water in bucket Y.
From the stem, we know:

$$W_Y = \frac{1}{2}C_Y$$

After pouring, the total water in bucket Y is $W_Y + W_X$.
The question asks for the value of the fraction: $\frac{W_Y+W_X}{C_Y}$.
Substituting what we know:

$$\frac{\frac{1}{2}C_Y + W_X}{C_Y} = \frac{1}{2} + \frac{W_X}{C_Y}$$

To answer the question, we must be able to find a specific numerical value for the ratio $\frac{W_X}{C_Y}$.

Step 3: Detailed Explanation:
Evaluating Statement (1) Alone:
"Before the water from X was poured, X was 1/3 full."
This tells us: $W_X = \frac{1}{3}C_X$.
Substituting this into the ratio we need to find:

$$\frac{W_X}{C_Y} = \frac{\frac{1}{3}C_X}{C_Y} = \frac{1}{3}\left(\frac{C_X}{C_Y}\right)$$

We cannot determine the value of this expression because we do not know the relationship between the capacities of X and Y (the ratio $\frac{C_X}{C_Y}$).
Therefore, Statement (1) alone is not sufficient.

Evaluating Statement (2) Alone:
"X and Y have the same capacity."
This tells us: $C_X = C_Y$.
The ratio we need to find is $\frac{W_X}{C_Y}$. The stem does not provide any information about the amount of water in bucket X, W_X. It could be any value from 0 to C_X.
Therefore, Statement (2) alone is not sufficient.

Evaluating Statements (1) and (2) Together:
From Statement (1): $W_X = \frac{1}{3}C_X$.
From Statement (2): $C_X = C_Y$.
We can combine these to find the ratio we need.

$$\frac{W_X}{C_Y} = \frac{\frac{1}{3}C_X}{C_Y}$$

Since $C_X = C_Y$, we can substitute C_Y for C_X:

$$\frac{W_X}{C_Y} = \frac{\frac{1}{3}C_Y}{C_Y} = \frac{1}{3}$$

Now we can calculate the final fraction in bucket Y:

$$\text{Final Fraction} = \frac{1}{2} + \frac{W_X}{C_Y} = \frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

Since we can find a unique value, the statements together are sufficient.

Step 4: Final Answer:
Neither statement is sufficient on its own, but combining them provides enough information to solve the problem. This corresponds to option (C).

Quick Tip

For Data Sufficiency questions involving unknown quantities, it's often helpful to set up an algebraic expression representing the value you need to find. Then, analyze each statement to see if it provides the missing variables or relationships to solve for that expression. Here, the key was realizing we needed the ratio $\frac{W_X}{C_Y}$.