

5. Mike finished ahead of Paulos. Paulos and Berhanu both finished before Lema. Orion did not finish last. Who was the last to finish? (1)
- A. ✓ Lema B. Orion
- C. Paulos D. Berhanu

Answer: A

We are given that Mike finished before Paulos, and both Paulos and Berhanu finished before Lema, meaning Lema is behind all of them. Since Orion did not finish last, Lema must be the last to finish.

6. At university, three girls, Almaz, Sophia, and Samra, are dating three boys, Michael, Thomas, and Maru. Almaz is dating Michael. Sophia is not dating the physics major. Samra is not dating the theatre major. Michael is a biology major. Maru is not majoring in theatre. Which of the following statements is correct, based on the above information?
- A. Samra is dating Maru, who is majoring in theatre.
- B. ✓ **Samra is dating Maru, who is a physics major.**
- C. Only Almaz and Sophia are dating two of the students.
- D. Almaz is dating a theatre major.

Answer: B

Since Michael is the biology major, the remaining majors (physics and theatre) belong to Thomas and Maru. Maru is not in theatre, so Maru is the physics major, which means Samra (who is not dating the theatre major) must be dating Maru.

7. Which two statements prove that "Lemlem and Samuel are married"? A. Lemlem is married to Alemu's only brother. B. Lemlem married her high school sweet heart. C. Samuel and Lemlem love each other. D. Alemu has the same parents as Samuael.
- A. B and C
- B. ✓ A and D
- C. C and D
- D. A and C

Answer: B

Statement A says Lemlem is married to Alemu's only brother, and statement D says Samuel and Alemu share the same parents (making Samuel his brother). Together, they prove Lemlem is married to Samuel.

8. Which two statements prove that "Senait is a child"? A. Senait lives with her parents. B. Senait is the little sister of Bekele C. Bekele has just turned 13. D. Bekele is still in school. (1)
- A. C and D
- B. A and C
- C. B and D
- D. ✓ **B and C**

Answer: D

If Bekele has just turned 13 (C) and Senait is his little sister (B), then Senait is younger than 13, which proves she is a child.

9. Which two statements prove that Eleni is a doctor? A. Eleni loves people. B. Eleni's father is teacher. C. Eleni's brother is a doctor. D. Eleni has the same job as her brother. (1)
- A. ✓ C and D B. A and D
C. B and C D. A and C

Answer: A

Knowing that Eleni's brother is a doctor (C) and Eleni has the same job as her brother (D) directly proves that Eleni is a doctor.

10. *Regular physical activity provided numerous health benefits. : from leaner bodies and ,lower blood pressure to improved mental health and cognitive functioning. As the school physical education program promotes physical activity and can teach skills as well as form or change behavior, it holds an important key to influencing health and well being across life span. To improve the fitness of students, we need to rethink the design and delivery of school- based physical education program. Adults in some countries think that information about health was more important for students to learn than content in language arts, mathematics, science, history or any other subject. Despite this high ranking, most schools devote minimum curriculum time to teaching students how to lead healthy lives. Our first step might be to consider ways to increase curriculum time devoted to physical education. In addition, schools need to thoughtfully analyze the design and delivery of school physical education programs to ensure that they are engaging, developmentally appropriate, inclusive and instructionally powerful. Adapted from Test Prep Review: A resource from Mometrix* (1)
- According to this passage, regular physical activity is needed to

- A. lose weight.
- B. control one's blood pressure.
- C. ✓ **improve ones' physical as well as mental health.**
- D. improve ones' cognitive skills.

Answer: C

The passage states that regular physical activity provides benefits ranging from leaner bodies and lower blood pressure (physical health) to improved mental health and cognitive functioning (mental health).

11. *Regular physical activity provided numerous health benefits. : from leaner bodies and ,lower blood pressure to improved mental health and cognitive functioning. As the school physical education program promotes physical activity and can teach skills as well as form or change behavior, it holds an important key to influencing health and well being across life span. To improve the fitness of students, we need to rethink the design and delivery of school- based physical education program. Adults in some countries think that information about health was more important for students to learn than content in language arts, mathematics, science, history or any other subject. Despite this high ranking, most schools devote minimum curriculum time to teaching students how to lead healthy lives. Our first step might be to consider ways to increase curriculum time devoted to physical education. In addition, schools need to thoughtfully analyze the design and delivery of school physical education programs to ensure that they are engaging, developmentally appropriate, inclusive and instructionally powerful. Adapted from Test Prep Review: A resource from Mometrix* (1)
- In order to tone up the physical education program,

- A. an assessment of the existing program should be made.
- B. it should be compulsory at school.
- C. ✓ **the program should be reoriented and implemented.**
- D. a committee should be set up in every school.

Answer: C

To 'tone up' (meaning to improve or strengthen) the program, the passage suggests we must 'rethink the design and delivery', which means it should be reoriented and implemented.

12. Regular physical activity provided numerous health benefits : from leaner bodies and ,lower blood pressure to improved mental health and cognitive functioning. As the school physical education program promotes physical activity and can teach skills as well as form or change behavior, it holds an important key to influencing health and well being across life span. To improve the fitness of students, we need to rethink the design and delivery of school- based physical education program. Adults in some countries think that information about health was more important for students to learn than content in language arts, mathematics, science, history or any other subject. Despite this high ranking, most skills devote minimum curriculum time to teaching students how to lead healthy lives. Our first step might be to consider ways to increase curriculum time devoted to physical education. In addition, schools need to thoughtfully analyze the design and delivery of school physical education programs to ensure that they are engaging, developmentally appropriate, inclusive and instructionally powerful. Adapted from Test Prep Review: A resource from Mometrix
- According to some countries, health education is more important than teaching
- (1)

- A. natural sciences.
- B. social sciences.
- C. liberal arts.
- D. ✓ **any subject.**

Answer: D

The text states that some countries rank information about health as more important for students to learn than content in language arts, mathematics, science, history, or 'any other subject'.

13. *Regular physical activity provided numerous health benefits. : from leaner bodies and ,lower blood pressure to improved mental health and cognitive functioning. As the school physical education program promotes physical activity and can teach skills as well as form or change behavior, it holds an important key to influencing health and well being across life span. To improve the fitness of students, we need to rethink the design and delivery of school- based physical education program. Adults in some countries think that information about health was more important for students to learn than content in language arts, mathematics, science, history or any other subject. Despite this high ranking, most schools devote minimum curriculum time to teaching students how to lead healthy lives. Our first step might be to consider ways to increase curriculum time devoted to physical education. In addition, schools need to thoughtfully analyze the design and delivery of school physical education programs to ensure that they are engaging, developmentally appropriate, inclusive and instructionally powerful. Adapted from Test Prep Review: A resource from Mometrix*
- The author wants the reoriented physical education program to be

- A. ✓ **comprehensive.**
- B. short.
- C. thoughtful.
- D. relevant.

Answer: A

The author wants the program to ensure it is 'engaging, developmentally appropriate, inclusive and instructionally powerful', which describes a comprehensive and well-rounded program.

14. Marie Curie was one of the most accomplished scientists in history. Together with her husband, Pierre, she discovered radium, an element widely used for treating cancer, and studied uranium and other radioactive substances. Pierre and Marie's amicable collaboration later helped to unlock the secrets of the atom. Marie was born in 1867 in Warsaw, Poland, where her father was a professor of physics. At an early age, she displayed a brilliant mind and a blithe personality. Her great exuberance for learning prompted her to continue with her studies after high school. She became disgruntled, however, when she learned that the university in Warsaw was closed to women. Determined to receive a higher education, she defiantly left Poland and in 1891 entered the Sorbonne, a French university, where she earned her master's degree and doctorate in physics. Marie was fortunate to have studied at the Sorbonne with some of the greatest scientists of her day, one of whom was Pierre Curie. Marie and Pierre were married in 1895 and spent many productive years working together in the physics laboratory. A short time after they discovered radium, Pierre was killed by a horse-drawn wagon in 1906. Marie was stunned by this horrible misfortune and endured heartbreaking anguish. Despondently she recalled their close relationship and the joy that they had shared in scientific research. The fact that she had two young daughters to raise by herself greatly increased her distress. Curie's feeling of desolation finally began to fade when she was asked to succeed her husband as a physics professor at the Sorbonne. She was the first woman to be given a professorship at the world-famous university. In 1911 she received the Nobel Prize in chemistry for isolating radium. Although Marie Curie eventually suffered a fatal illness from her long exposure to radium, she never became disillusioned about her work. Regardless of the consequences, she had dedicated herself to science and to revealing the mysteries of the physical world. Adapted from Test Prep Review: A resource from Mometrix

When she learned that she could not attend the university in Warsaw, she felt _____.

- A. ✓ annoyed B. hopeless
C. worried D. delighted

Answer: A

The text states she became 'disgruntled' when she learned the university was closed to women; 'disgruntled' means disappointed, annoyed, or dissatisfied.

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(1)

Marie _____ by leaving Poland and traveling to France to enter the Sorbonne.

- A. showed intelligence
- B. ✓ challenged authority
- C. was distressed
- D. behaved

Answer: B

The passage says she 'defiantly left Poland' to enter the Sorbonne. Defiance is the act of challenging authority or rules.

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(1)

_____ she remembered their joy together.

A. Worriedly

B. ✓ Dejectedly

C. Happily

D. Tearfully

Answer: B

The passage describes that she recalled their joy 'despondently', which is synonymous with 'dejectedly' or in a low-spirited, sad manner.

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Her _____ began to fade when she returned to the Sorbonne to succeed her husband.

- A. anger
B. misfortune
C. disappointment
D. ✓ **wretchedness**

Answer: D

The passage states her 'feeling of desolation' began to fade. Desolation refers to a state of complete loneliness or misery, which is synonymous with wretchedness.

18. Which continuation is right? I don't trust social medias. _____. (1)
- A. I have never and I will never
B. ✓ **I never have and I never will**
C. Never can I and never I will
D. Never I have and never I will

Answer: B

'I never have and I never will' is the grammatically correct idiomatic expression used to show that someone has not done something in the past and does not intend to do it in the future.

19. If I were in your position, I _____. (1)
- A. Will never have done such silly things.
B. Would never have done such silly things.
C. Would have done such silly things.
D. ✓ **would never do such silly things.**

Answer: D

This sentence uses the second conditional structure ('If' + past subjunctive, 'would' + bare infinitive) to express a hypothetical situation in the present or future, making 'would never do' the correct fit.

20. She contracted COVID 19 easily because she was obese and had other preexisting diseases. The doctor said that if she _____ obese, her chances of getting the disease would have been slim. (1)
- A. Had been
B. ✓ **had not been**
C. were not
D. were

Answer: B

This is a third conditional sentence expressing a past hypothetical situation. The condition clause requires the past perfect tense ('had not been') to match 'would have been' in the main clause.

21. I: Haven't you seen this film? _____.

(1)

- A. No, I have
- B. ✓ Yes, I have
- C. Yes, have I
- D. Yes, I haven't

Answer: B

In English, negative questions are answered based on the factual truth. If you have seen the film, you answer 'Yes, I have' regardless of the negative framing of the question.

22. The man vehemently denied all the charges of killing that were brought against him.

(1)

- A. hysterically
- B. ✓ forcefully
- C. devoutly
- D. carelessly

Answer: B

'Vehemently' means showing strong, intense, or passionate feeling, which is closest in meaning to 'forcefully'.

23. Which word means the same as "counterfeit?"

(1)

- A. robbery
- B. ✓ fake
- C. copy
- D. match

Answer: B

'Counterfeit' refers to an imitation of something valuable made with the intention to deceive, which means it is a 'fake'.

24. He inherited a large amount of fortune from his parents. So, he lives a very lavish lifestyle.

(1)

- A. stingy
- B. ✓ extravagant
- C. spartan
- D. humble

Answer: B

A 'lavish' lifestyle is one characterized by rich, luxurious, and expensive living, which is synonymous with an 'extravagant' lifestyle.

25. He has reached across the world, fomenting violence against the west.

(1)

- A. ✓ instigating
- B. planning
- C. subduing
- D. negating

Answer: A

"Fomenting" means instigating or stirring up an undesirable or violent sentiment, making "instigating" the closest synonym.

26. Which of the following words cannot go together with the others?

(1)

- A. Wind
- B. ✓ Sky
- C. Rain
- D. Snow

Answer: B

Wind, Rain, and Snow are all active meteorological phenomena or forms of weather, whereas the Sky is the atmosphere where these phenomena occur.

27. EAGLE is to BIRD as ROSE is to _____

(1)

- A. BEAUTIFUL
- B. GENTLEMAN
- C. ✓ FLOWER
- D. ANIMAL

Answer: C

An eagle is a specific type of bird, and a rose is a specific type of flower, representing a member-to-class relationship.

28. CAR is to TRANSPORTATION as GAME is to _____ (1)

- A. INFORMATION
B. ✓ ENTERTAINMENT
C. FOOTBALL
D. MANIPULATION

Answer: B

A car is a primary medium or instrument of transportation, just as a game is a primary medium or instrument of entertainment.

29. SPEED is to FAST as TEMPERATURE is to _____ (1)

- A. ICE
B. THERMOMETER
C. CLIMATE
D. ✓ WARM

Answer: D

Fast is a characteristic descriptor of a high speed, and warm is a characteristic descriptor of a moderate-to-high temperature.

30. FAST is to RUNNING as SLOW is to _____ (1)

- A. LAZY
B. PACE
C. ✓ WALKING
D. SPEED

Answer: C

Running is naturally associated with a fast pace, while walking is naturally associated with a slow pace.

31. CANDLE: WAX (1)

- A. TREE: LEAVES
B. BRANCH: WOOD
C. ✓ PAPER: PULP
D. BAMBOO: FURNITURE

Answer: C

A candle is made from wax, and paper is made from pulp, which represents a product-to-raw-material relationship.

32. CHEF: FOOD (1)

- A. BRUSH: WALL
B. PAINT: PAINTER
C. BRICK: CARPENTER
D. ✓ SCULPTOR: STONE

Answer: D

A chef is a professional who creates or prepares food, and a sculptor is an artist who creates works from stone.

33. BOARD: TRAIN (1)

- A. WALK: SHOE
B. CHAIR: SIT
C. ✓ MOUNT: HORSE
D. BICYCLE: DRIVE

Answer: C

To board is the action of entering or getting onto a train, and to mount is the action of getting onto a horse.

34. The Triangular Number Sequence T_n can be defined recursively as $T_1 = 1, T_n = T_{n-1} + n$ for $n > 1$. What is the eleventh term of the sequence? (1)

- A. ✓ 66
B. 45
C. 78
D. 55

Answer: A

The eleventh term of the triangular number sequence is given by $T_{11} = \frac{11 \times 12}{2} = 66$.

Total bonuses over the period equal 17.1 million Birr, and total salaries equal 1712 million Birr. The percentage is $\frac{17.1}{1712} \times 100\% \approx 1.0\%$.

40. For Questions 40- 45 Use The Following Information. The following table gives the expenditure (in millions of Birr) of a certain company per year over five years. Items of Expenditure Year | Salary | Fuel and Transport | Bonuses | Interest on Loans | Taxes 2008 | 288 | 98 | 3.1 | 23.4 | 83 2009 | 342 | 112 | 2.52 | 32.5 | 108 2010 | 324 | 101 | 3.84 | 41.2 | 74 2011 | 336 | 133 | 3.68 | 36.4 | 88 2012 | 422 | 142 | 3.96 | 49.4 | 98 (1)

In which year did the company have the highest expenditure?

- A. 2009
B. 2008
C. 2010
D. ✓ 2012

Answer: D

Comparing the sum of all expenditure categories for each year shows that 2012 has the highest total expenditure at 715.36 million Birr.

41. For Questions 40- 45 Use The Following Information. The following table gives the expenditure (in millions of Birr) of a certain company per year over five years. Items of Expenditure Year | Salary | Fuel and Transport | Bonuses | Interest on Loans | Taxes 2008 | 288 | 98 | 3.1 | 23.4 | 83 2009 | 342 | 112 | 2.52 | 32.5 | 108 2010 | 324 | 101 | 3.84 | 41.2 | 74 2011 | 336 | 133 | 3.68 | 36.4 | 88 2012 | 422 | 142 | 3.96 | 49.4 | 98 (1)

What is the total expenditure of the company in the year 2012?

- A. ✓ 715.36
B. 1710
C. 456.36
D. 586

Answer: A

The total expenditure in 2012 is the sum of its items: $422 + 142 + 3.96 + 49.4 + 98 = 715.36$ million Birr.

42. For Questions 40- 45 Use The Following Information. The following table gives the expenditure (in millions of Birr) of a certain company per year over five years. Items of Expenditure Year | Salary | Fuel and Transport | Bonuses | Interest on Loans | Taxes 2008 | 288 | 98 | 3.1 | 23.4 | 83 2009 | 342 | 112 | 2.52 | 32.5 | 108 2010 | 324 | 101 | 3.84 | 41.2 | 74 2011 | 336 | 133 | 3.68 | 36.4 | 88 2012 | 422 | 142 | 3.96 | 49.4 | 98 (1)

For What item or purpose was the company's expenditure the least during the given period?

- A. ✓ Bonus
B. Salary
C. Taxes
D. Transport and Fuel

Answer: A

Summing the columns shows that the total expenditure on bonuses (17.1 million) is significantly lower than that on salaries, taxes, or fuel and transport.

43. If $x = 15\%$ of 30 and $y = 30\%$ of 15, then which of the following is true? (1)

- A. ✓ x and y are equal
B. x is less than y
C. The relation between x and y cannot be determined
D. y is less than x

Answer: A

$x = 0.15 \times 30 = 4.5$ and $y = 0.30 \times 15 = 4.5$, making both values equal.

44. Student X and student Y have 2000 Birr. If $\frac{4}{15}$ of X's share is equal to $\frac{2}{5}$ of Y's share, how much amount does Y have? (1)

- A. ✓ 800 Birr
B. 1500 Birr
C. 1200 Birr
D. 1100 Birr

Answer: A

From the given relations, $\frac{4}{15}X = \frac{2}{5}Y \implies X = 1.5Y$. Substituting into $X + Y = 2000$ yields $2.5Y = 2000$, which gives $Y = 800$ Birr.

45. What is the simplified form of $(2x + 3)(x + 6) - (2x - 5)(x + 10)$? (1)
- A. 16
B. 32
C. 72
D. ✓ 68

Answer: D

Expanding the expressions yields $(2x^2 + 15x + 18) - (2x^2 + 15x - 50) = 18 - (-50) = 68$.

46. If the square of a number increased by two times the number is equal to six times the number increased by twelve, which one of the following is the possible value of the number? (1)
- A. 4
B. ✓ 6
C. -4
D. -6

Answer: B

The description translates to the equation $x^2 + 2x = 6x + 12$, which simplifies to $x^2 - 4x - 12 = 0$, giving solutions $x = 6$ or $x = -2$.

47. The monthly telephone bill of Getachew was Birr 400 and it increases by 10% after 12 months, and another 20% increase is applied six months later. What is the price of Getachew's telephone bill after 18 months? (1)
- A. 520 Birr
B. ✓ 528 Birr
C. 489 Birr
D. 430 Birr

Answer: B

The initial bill of 400 Birr increases by 10% to 440 Birr, which then increases by 20% to $440 \times 1.2 = 528$ Birr after 18 months.

48. The sum of the ages of the father and his son is equal to sixty years. Six years ago the age of the father was five times the age of the son. What will be the age of the son six years from now? (1)
- A. 19 years
B. 23 years
C. 22 years
D. ✓ 20 years

Answer: D

Letting the father's and son's current ages be F and S , we have $F + S = 60$ and $F - 6 = 5(S - 6)$, which gives $S = 14$. Thus, six years from now, the son will be 20 years old.

49. What is the sum of the following infinite series $S = 2 - \frac{1}{3} + 1 - \frac{1}{9} + \frac{1}{2} - \frac{1}{27} + \frac{1}{4} - \frac{1}{81} + \dots$? (1)
- A. ✓ $\frac{7}{2}$
B. $\frac{32}{9}$
C. $\frac{41}{9}$
D. $\frac{9}{2}$

Answer: A

The given infinite series can be split into two geometric series: $S_1 = 2 + 1 + \frac{1}{2} + \dots$ and $S_2 = -(\frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \dots)$. Calculating their sums gives $S_1 = \frac{2}{1-1/2} = 4$ and $S_2 = -\frac{1/3}{1-1/3} = -\frac{1}{2}$, resulting in a total sum of $4 - \frac{1}{2} = \frac{7}{2}$.

50. 1.2 (II) If $(1^2 + 2^2 + 3^2 + \dots + 10^2) = a$, then what is the value of $(2^2 + 4^2 + 6^2 + \dots + 20^2)$ in terms of a ? (1)
- A. ✓ $4a$
B. $2a$
C. $a+4$
D. $a+2$

Answer: A

The term $(2^2 + 4^2 + 6^2 + \dots + 20^2)$ can be factored as $2^2(1^2 + 2^2 + 3^2 + \dots + 10^2)$, which is equal to $4a$.

51. If $y > 2$, compare the following two quantities X and Y whose information are given below. Quantity X: $\frac{3y-2}{5}$ (1)
- Quantity Y: y
- A. ✓ Quantity Y is greater than Quantity X.**
- B. Quantity X is greater than Quantity Y.
- C. The relation cannot be determined with the information provided.
- D. The two quantities are equal.

Answer: A

Comparing the two quantities, we compute $y - \frac{3y-2}{5} = \frac{2y+2}{5}$. Since $y > 2$, this expression is always positive, which means y (Quantity Y) is greater than $\frac{3y-2}{5}$ (Quantity X).

- 52.** What is the probability of getting exactly two tails when three coins are tossed at the same time? (1)
- A. $\frac{1}{4}$
- B. $\frac{1}{8}$
- C. $\frac{3}{4}$
- D. $\frac{3}{8}$

Answer: D

When three coins are tossed, there are $2^3 = 8$ equally likely outcomes. Exactly two tails occur in 3 outcomes ($\{\text{HTT, THT, TTH}\}$), so the probability is $\frac{3}{8}$.

- 53.** What is the probability that a number selected at random from the first 50 natural numbers is prime and odd number? (1)
- A. $\frac{3}{10}$
- B. ✓ $\frac{7}{25}$
- C. $\frac{8}{25}$
- D. $\frac{13}{51}$

Answer: B

There are 15 prime numbers among the first 50 natural numbers. Among these, only 2 is even, meaning there are 14 odd prime numbers, which gives a probability of $\frac{14}{50} = \frac{7}{25}$.

- 54.** If $3x + 7y = 80$ and $x - y = 10$, then what is the value of $x + y$? (1)
- A. 10 B. 15
C. 25 D. ✓ 20

Answer: D

From $x - y = 10$, we have $x = y + 10$. Substituting this into $3x + 7y = 80$ yields $3(y + 10) + 7y = 80$, which simplifies to $10y = 50$, so $y = 5$ and $x = 15$. Thus, $x + y = 15 + 5 = 20$.

55. Which of the following system of linear inequalities is represented by the graph given below?

(1)

[Figure: A Cartesian plane with the horizontal x -axis (arrowhead at the right, labelled x) and the vertical y -axis (arrowhead at the top, labelled y). Three straight lines are drawn, all as plain solid lines with no shading of any region: (1) a line of positive slope rising left to right, crossing the x -axis at the marked point -1 and the y -axis at the marked point 1 , so it passes through $(-1, 0)$ and $(0, 1)$; (2) a line of negative slope falling left to right, crossing the y -axis at the same point 1 and the x -axis at the marked point 1 , so it passes through $(0, 1)$ and $(1, 0)$; the two lines cross each other on the y -axis at $(0, 1)$. (3) a horizontal line running the full width of the drawing at the level of the marked point -1 on the y -axis, that is the line $y = -1$. The three lines enclose a triangle whose apex is at $(0, 1)$ and whose base lies on $y = -1$. Axis marks shown and labelled: -1 and 1 on the x -axis, 1 and -1 on the y -axis. No region is shaded and no arrows indicate a solution side.]

A.
$$\begin{cases} y \leq x + 1 \\ y \leq x - 1 \\ y \leq -1 \end{cases}$$

B.
$$\begin{cases} y \leq x + 1 \\ y \leq -x + 1 \\ y \leq -1 \end{cases}$$

C.
$$\begin{cases} y \leq x + 1 \\ y \leq x - 1 \\ y \geq -1 \end{cases}$$

D. ✓
$$\begin{cases} y \leq x + 1 \\ y \leq -x + 1 \\ y \geq -1 \end{cases}$$

Answer: D

The horizontal boundary is $y = -1$ and the region lies above it ($y \geq -1$). The other two boundary lines have equations $y = x + 1$ and $y = -x + 1$, and the triangular region lies below both of them, yielding the system $y \leq x + 1, y \leq -x + 1$, and $y \geq -1$.

56. The square of the 7th term of an arithmetic progression with positive common difference is equal to the product of the 3rd and 17th terms, then what is the ratio of the first term to the common difference? (1)

A. 3 : 4

B. ✓ 2 : 3

C. 4 : 3

D. 3 : 2

Answer: B

Using the formula for the terms of an arithmetic progression, the equation $(a + 6d)^2 = (a + 2d)(a + 16d)$ simplifies to $a^2 + 12ad + 36d^2 = a^2 + 18ad + 32d^2$. This reduces to $4d^2 = 6ad$, which gives the ratio of the first term to the common difference as $\frac{a}{d} = \frac{4}{6} = \frac{2}{3}$.

— END OF MARKING KEY —

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