

How to use this worksheet. Twenty-one questions, about 25 minutes, with the answer key at the end. Whole numbers include zero; natural numbers do not. For any composite solid, count every surface separately.

Formula sheet

Whole numbers start at 0; natural numbers start at 1 — a favourite AAI distinction

Unit digits of powers cycle in blocks of 4: use the remainder when the exponent is divided by 4

Divisible by 90 means divisible by both 9 and 10

Rectangle = $l \times b$ | Triangle = $\frac{1}{2}bh$ | Circle = πr^2 | Cube volume = a^3 , surface = $6a^2$ |

Cylinder volume = $\pi r^2 h$

A hemispherical bowl has three surfaces: outer curved, inner curved, and the flat rim

Section A · Number system — Factors, multiples, primes and divisibility

Eight questions. One is a real previous year question.

- The HCF of 12 and 18 is:
(1) 4 (2) 6 (3) 8 (4) 9
- The LCM of 4 and 6 is:
(1) 10 (2) 12 (3) 24 (4) 8
- The largest three-digit number divisible by 7 is:
(1) 993 (2) 994 (3) 997 (4) 1001
- The smallest four-digit number divisible by 6 is:
(1) 1000 (2) 1002 (3) 1004 (4) 1006
- Which of the following is a prime number?
(1) 91 (2) 93 (3) 97 (4) 99
- The unit digit of 7^{45} is:
(1) 1 (2) 3 (3) 7 (4) 9
- The number of factors of 36 is:
(1) 6 (2) 8 (3) 9 (4) 12
- What is the product of the smallest 8 whole numbers? [PYQ 2021 · Shift 3]
(1) 40320 (2) 5040 (3) 1 (4) 0

Working space — Questions 1 to 8

Write the formula before you substitute.

Section B · Mensuration — Area, perimeter, volume and surface area

Eight questions. Learn the formula, then substitute carefully.

- The area of a rectangle with length 12 cm and breadth 8 cm is:
(1) 20 cm^2 (2) 40 cm^2 (3) 96 cm^2 (4) 48 cm^2
- The area of a triangle with base 10 cm and height 6 cm is:
(1) 60 cm^2 (2) 30 cm^2 (3) 16 cm^2 (4) 40 cm^2
- Using $\pi = \frac{22}{7}$, the circumference of a circle of radius 7 cm is:
(1) 22 cm (2) 44 cm (3) 88 cm (4) 154 cm

12. Using $\pi = 22/7$, the area of a circle of radius 14 cm is:

- (1) 308 cm² (2) 616 cm² (3) 1232 cm² (4) 88 cm²

13. The volume of a cube of side 5 cm is:

- (1) 25 cm³ (2) 100 cm³ (3) 125 cm³ (4) 150 cm³

14. The total surface area of a cube of side 4 cm is:

- (1) 64 cm² (2) 80 cm² (3) 96 cm² (4) 112 cm²

15. Using $\pi = 22/7$, the volume of a cylinder with radius 7 cm and height 10 cm is:

- (1) 1100 cm³ (2) 1320 cm³ (3) 1540 cm³ (4) 1760 cm³

16. The area of a trapezium with parallel sides 10 cm and 14 cm and height 6 cm is:

- (1) 48 cm² (2) 60 cm² (3) 72 cm² (4) 84 cm²

Working space — Questions 9 to 16

Write the formula before you substitute.

Section C · Previous year questions — Straight from the AAI ATC papers

Five questions. All five are real previous year questions.

17. The perimeter of one square is 52 metres and that of another is 20 metres. What is the perimeter of the square whose area equals the difference of the areas of the two squares? [PYQ 2021 · Shift 2]

- (1) 48 m (2) 52 m (3) 40 m (4) 44 m

18. The outer and inner radii of a hemispherical bowl are 40 cm and 35 cm respectively. Find the total surface area of the bowl. [PYQ 2021 · Shift 3]

- (1) 6125 π (2) 5055 π (3) 6025 π (4) 5255 π

19. If x and y are the two digits of the number 3212xy such that the number is divisible by 90, then (x + y) equals: [PYQ 2021 · Shift 2]

- (1) 0 (2) 3 (3) 2 (4) 1

20. If the cost of 30 articles is Rs. 4,500, find the cost of 12 articles. [PYQ 2021 · Shift 3]

- (1) Rs. 1,600 (2) Rs. 1,800 (3) Rs. 1,500 (4) Rs. 2,000

21. In an arithmetic progression (AP), the 9th term is 5 times the 2nd term and the 8th term is 1 more than 10 times the first term. What is the 4th term of the geometric progression (GP) whose first term is the second term of the AP and whose common ratio equals the common difference of the AP? [PYQ 2025 · Shift 2]

- (1) 1792 (2) 192 (3) 448 (4) 576

Working space — Questions 17 to 21

Write the formula before you substitute.

Answer key

Check only after you have attempted every question. Full worked solutions for each one are on the worksheet page at aviatelearnings.com.

1. (2)	6. (3)	11. (2)	16. (3)	21. (3)
2. (2)	7. (3)	12. (2)	17. (1)	

3. (2)	8. (4)	13. (3)	18. (3)	
4. (2)	9. (3)	14. (3)	19. (4)	
5. (3)	10. (2)	15. (3)	20. (2)	

Stuck on any of these? Bring them to a live class.

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