

✈ ETIHAD AIRWAYS PILOT APTITUDE TEST

MATHEMATICS — PRACTICE PAPER

COMPASS System | 50 Questions | Time Allowed: 40 Minutes | No Calculator Permitted

INSTRUCTIONS

- 1. This paper contains 50 questions across 11 mathematical topics tested in the Etihad Airways COMPASS pilot aptitude assessment.
- 2. Select the one best answer from the four options (A, B, C, D) for each question.
- 3. No calculator is permitted. All calculations must be performed mentally or on rough paper.
- 4. Time allowed is 40 minutes. Aim to spend no more than 48 seconds per question.

SECTION 1: Fractions & Percentages

Q1. During a navigation-planning exercise, A fuel reserve is 43% of a 9,500 L tank. How many litres are in reserve?

- A) 4,085 L
- B) 4,585 L
- C) 4,750 L
- D) 5,415 L

Q2. During a navigation-planning exercise, Express $\frac{4}{9}$ as a percentage, to 1 decimal place.

- A) 62.5%
- B) 44.4%
- C) 37.5%
- D) 42.0%

Q3. During a navigation-planning exercise, A pilot earns AED 33,500 monthly and receives a 8% increase. What is the new salary?

- A) AED 33,835
- B) AED 36,500
- C) AED 34,200
- D) AED 36,180

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Q4. During a navigation-planning exercise, Simplify: $5/\{10\} + 1/\{10\}$.

- A) $1/10$
- B) $5/11$
- C) $3/5$
- D) $6/19$

Q5. During a navigation-planning exercise, A flight carries 252 passengers. 26% are in business class. How many are in economy?

- A) 227
- B) 186
- C) 65
- D) 173

SECTION 2: Speed, Distance & Time

Q6. During a navigation-planning exercise, An aircraft travels at 440 knots for 2 hours 30 minutes. What distance does it cover?

- A) 1100 NM
- B) 1,500 NM
- C) 1,200 NM
- D) 960 NM

Q7. During a navigation-planning exercise, A jet covers 1,325 km in 2.5 hours. What is its average speed?

- A) 600 km/h
- B) 530 km/h
- C) 450 km/h
- D) 750 km/h

Q8. During a navigation-planning exercise, Convert 225 knots to km/h. (1 knot = 1.852 km/h)

- A) 370.4 km/h
- B) 463.0 km/h
- C) 416.7 km/h
- D) 555.6 km/h

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Q9. During a navigation-planning exercise, A flight route is 4,550 km long and the aircraft flies at 730 km/h. Estimate the flight time.

- A) 6.0 h
- B) 7.5 h
- C) 6.2 h
- D) 4.5 h

Q10. During a navigation-planning exercise, An aircraft descends from 31,200 ft at 1600 ft/min. How long does the descent take?

- A) 20 min
- B) 15 min
- C) 20 min
- D) 30 min

SECTION 3: Ratios & Scales

Q11. During a navigation-planning exercise, A chart has scale 1:350,000. A route measures 6 cm. What is the actual distance?

- A) 600 km
- B) 21 km
- C) 18 km
- D) 240 km

Q12. During a navigation-planning exercise, Fuel and additive are mixed in the ratio 7:1. If 48 L of fuel are used, how much additive is needed?

- A) 12 L
- B) 8 L
- C) 7 L
- D) 5 L

Q13. During a navigation-planning exercise, A bonus of AED 9,600 is shared in the ratio 2:3:4. What is the largest share?

- A) AED 3,000
- B) AED 4,000
- C) AED 4,266
- D) AED 2,000

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Q14. If 5 engineers can service 15 aircraft in 3 days, how many aircraft can 8 engineers service in 3 days?

Q14. During a navigation-planning exercise, 5 engineers service 13 aircraft in 3 days. At the same rate, how many aircraft can 7 engineers service?

- A) 18 aircraft
- B) 18 aircraft
- C) 24 aircraft
- D) 30 aircraft

Q15. During a navigation-planning exercise, A runway is 5 cm on a map and 2.5 km in reality. What is the map scale?

- A) 1:50,000
- B) 1:100,000
- C) 1:50,000
- D) 1:25,000

SECTION 4: Unit Conversions

Q16. During a navigation-planning exercise, Convert 13,500 ft to metres. (1 ft = 0.3048 m)

- A) 3,657.6 m
- B) 4,572.0 m
- C) 6,096.0 m
- D) 4114.8 m

Q17. During a navigation-planning exercise, Convert 55,000 kg to pounds. (1 kg = 2.205 lb)

- A) 132,300 lb
- B) 121,275 lb
- C) 165,375 lb
- D) 110,250 lb

Q18. During a navigation-planning exercise, Convert 85°C to Fahrenheit. ($F = \frac{9}{5}C + 32$)

- A) 185°F
- B) 176°F
- C) 212°F
- D) 248°F

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- B) 8,165 kg

Q19. During a navigation-planning exercise, Convert 12,800 lb to kg. (1 lb = 0.4536 kg)

- A) 5,806.1 kg
- B) 5,443.2 kg
- C) 7,257.6 kg
- D) 6,350.4 kg

Q20. During a navigation-planning exercise, Convert 0.6 nautical miles to metres. (1 NM = 1,852 m)

- A) 1,111 m
- B) 1,389 m
- C) 926 m
- D) 1,852 m

SECTION 5: Powers, Roots & Surds

Q21. During a navigation-planning exercise, Calculate: $2^{\{6\}}$.

- A) 256
- B) 32
- C) 64
- D) 128

Q22. During a navigation-planning exercise, Simplify: $\sqrt{121}$.

- A) 9
- B) 21
- C) 13
- D) 11

Q23. During a navigation-planning exercise, Calculate: $(4)^2 - (2)^2$.

- A) 25
- B) 12
- C) 16
- D) 4

Q24. During a navigation-planning exercise, Evaluate: $((3)^2)^2$.

- A) 243
- B) 9
- C) 81
- D) 27

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- D) 729

Q25. During a navigation-planning exercise, Simplify: $\sqrt{0.00030}$.

- A) 0.017
- B) 0.014
- C) 0.070
- D) 0.007

SECTION 6: Areas, Volumes & Spaces

Q26. During a navigation-planning exercise, A rectangular hangar is 100 m long and 33 m wide. What is its area?

- A) 4,800 m²
- B) 6,000 m²
- C) 3,300 m²
- D) 3,600 m²

Q27. During a navigation-planning exercise, A cylindrical tank has radius 1.5 m and height 5 m. Find its volume ($\pi \approx 3.14$).

- A) 50.24 m³
- B) 78.50 m³
- C) 35.33 m³
- D) 31.40 m³

Q28. During a navigation-planning exercise, A triangular taxiway marking has base 6 m and height 4 m. What is its area?

- A) 12.0 m²
- B) 30 m²
- C) 12 m²
- D) 20 m²

Q29. During a navigation-planning exercise, The wingspan of an aircraft is 54 m. What is the radius of the circle swept by one wingtip?

- A) 64 m
- B) 27 m
- C) 32 m
- D) 20 m

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Q30. During a navigation-planning exercise, A cargo container measures 4 m × 3 m × 2.5 m. What is its volume?

- A) 40.0 m³
- B) 20.0 m³
- C) 30.0 m³
- D) 30.0 m³

SECTION 7: Probability & Statistics

Q31. During a navigation-planning exercise, A bag contains 5 red, 6 blue and 7 green balls. Probability of blue?

- A) 2/5
- B) 1/3
- C) 1/2
- D) 6/18

Q32. During a navigation-planning exercise, The scores are 69, 76, 83, 72, 80. What is the mean?

- A) 80
- B) 76
- C) 72
- D) 76

Q33. During a navigation-planning exercise, A die is rolled twice. Probability of getting an even number on both rolls?

- A) 1/6
- B) 1/4
- C) 1/3
- D) 1/2

Q34. During a navigation-planning exercise, Find the range of: 13, 36, 22, 61, 29.

- A) 48
- B) 42
- C) 36
- D) 56

Q35. During a navigation-planning exercise, The average of 6 scores is 73. What is their total?

- A) 511
- B) 438
- C) 79
- D) 365

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SECTION 8: Algebraic Equations

Q36. During a navigation-planning exercise, Solve for x : $4x - 9 = 2x + 13$.

- A) $x = 14$
- B) $x = 6$
- C) $x = 11$
- D) $x = 10$

Q37. During a navigation-planning exercise, If $a = 3$ and $b = -2$, evaluate: $2a^2 - 3b$.

- A) 24
- B) 30
- C) 12
- D) 24

Q38. During a navigation-planning exercise, Factorise: $x^2 - 25$.

- A) $(x + 5)^2$
- B) $(x - 5)^2$
- C) $(x - 5)(x + 5)$
- D) $(x - 9)(x + 2)$

Q39. During a navigation-planning exercise, Solve for x : $2(x + 4) = 3x - 3$.

- A) $x = 14$
- B) $x = 10$
- C) $x = 4$
- D) $x = 10$

Q40. During a navigation-planning exercise, If $3x + 3y = 16$ and $y = 2$, find x .

- A) 3
- B) 5
- C) 3
- D) 1

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- B) 13 cm

SECTION 9: Trigonometry

Q41. During a navigation-planning exercise, In a right triangle, adjacent = 7 and hypotenuse = 11. What is $\cos \theta$?

- A) 1.20
- B) 0.50
- C) 0.75
- D) 0.64

Q42. During a navigation-planning exercise, What is $\sin(30^\circ)$?

- A) 0
- B) 0.866
- C) 0.5
- D) 0.5

Q43. During a navigation-planning exercise, A ladder 4.5 m long makes an angle of 60° with the ground. How high does it reach? ($\sin 60^\circ \approx 0.866$)

- A) 3.46 m
- B) 5.20 m
- C) 3.90 m
- D) 2.00 m

Q44. During a navigation-planning exercise, What is $\tan(30^\circ)$?

- A) $\sqrt{3}$
- B) 0.577
- C) 0.5
- D) 0.866

Q45. During a navigation-planning exercise, An aircraft is at 2,700 ft altitude and 8,500 ft from the runway along the glide path. What is $\sin$ of the glide angle?

- A) 0.32
- B) 0.60
- C) 0.20
- D) 0.40

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- B) 0.5

SECTION 10: Complex Operations

Q46. During a navigation-planning exercise, Calculate: $(120 \times 0.4) \div (11 \times 2)$.

- A) 2.2
- B) 3.0
- C) 1.5
- D) 2.0

Q47. During a navigation-planning exercise, A pilot works 8 h 20 min, 7 h 30 min and 8 h 45 min. What is the total?

- A) 24 h 30 min
- B) 24 h 35 min
- C) 26 h 15 min
- D) 22 h 00 min

Q48. During a navigation-planning exercise, An aircraft burns 1,500 kg/h. How much fuel is used in 2.33 h?

- A) 4,800 kg
- B) 3,500 kg
- C) 3,200 kg
- D) 6,000 kg

SECTION 11: Word Problems

Q49. During a navigation-planning exercise, A flight is delayed by 35 minutes. If the scheduled arrival was 14:10, what is the new arrival time?

- A) 14:45
- B) 15:00
- C) 15:10
- D) 14:35

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- A) 4h 55min

Q50. During a navigation-planning exercise, A team of 6 technicians can inspect an aircraft in 48 minutes. At the same rate, how long would 8 technicians take?

- A) 24.0 min
- B) 36.0 min
- C) 36.0 min
- D) 60.0 min

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ANSWER KEY & EXPLANATIONS

Q1. Correct Answer: A) 4,085 L

Explanation: Apply the stated formula carefully and check the units.

Q2. Correct Answer: B) 44.4%

Explanation: Apply the stated formula carefully and check the units.

Q3. Correct Answer: D) AED 36,180

Explanation: Apply the stated formula carefully and check the units.

Q4. Correct Answer: C) 3/5

Explanation: Apply the stated formula carefully and check the units.

Q5. Correct Answer: B) 186

Explanation: Apply the stated formula carefully and check the units.

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Explanation: $480 \times 2.5 = 1,200 \text{ NM}$

ANSWER KEY & EXPLANATIONS

Q6. Correct Answer: A) 1100 NM

Explanation: Apply the stated formula carefully and check the units.

Q7. Correct Answer: B) 530 km/h

Explanation: Apply the stated formula carefully and check the units.

Q8. Correct Answer: C) 416.7 km/h

Explanation: Apply the stated formula carefully and check the units.

Q9. Correct Answer: C) 6.2 h

Explanation: Apply the stated formula carefully and check the units.

Q10. Correct Answer: A) 20 min

Explanation: Apply the stated formula carefully and check the units.

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ANSWER KEY & EXPLANATIONS

Q11. Correct Answer: B) 21 km

Explanation: Apply the stated formula carefully and check the units.

Q12. Correct Answer: C) 7 L

Explanation: Apply the stated formula carefully and check the units.

Q13. Correct Answer: C) AED 4,266

Explanation: Apply the stated formula carefully and check the units.

Q14. Correct Answer: A) 18 aircraft

Explanation: Apply the stated formula carefully and check the units.

Q15. Correct Answer: A) 1:50,000

Explanation: Apply the stated formula carefully and check the units.

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ANSWER KEY & EXPLANATIONS

Q16. Correct Answer: D) 4114.8 m

Explanation: Apply the stated formula carefully and check the units.

Q17. Correct Answer: B) 121,275 lb

Explanation: Apply the stated formula carefully and check the units.

Q18. Correct Answer: A) 185°F

Explanation: Apply the stated formula carefully and check the units.

Q19. Correct Answer: A) 5,806.1 kg

Explanation: Apply the stated formula carefully and check the units.

Q20. Correct Answer: A) 1,111 m

Explanation: Apply the stated formula carefully and check the units.

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ANSWER KEY & EXPLANATIONS

Q21. Correct Answer: C) 64

Explanation: Apply the stated formula carefully and check the units.

Q22. Correct Answer: D) 11

Explanation: Apply the stated formula carefully and check the units.

Q23. Correct Answer: B) 12

Explanation: Apply the stated formula carefully and check the units.

Q24. Correct Answer: C) 81

Explanation: Apply the stated formula carefully and check the units.

Q25. Correct Answer: A) 0.017

Explanation: Apply the stated formula carefully and check the units.

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Explanation: $P(\text{blue}) = 3/10$

ANSWER KEY & EXPLANATIONS

Q26. Correct Answer: C) 3,300 m²

Explanation: Apply the stated formula carefully and check the units.

Q27. Correct Answer: C) 35.33 m³

Explanation: Apply the stated formula carefully and check the units.

Q28. Correct Answer: A) 12.0 m²

Explanation: Apply the stated formula carefully and check the units.

Q29. Correct Answer: B) 27 m

Explanation: Apply the stated formula carefully and check the units.

Q30. Correct Answer: C) 30.0 m³

Explanation: Apply the stated formula carefully and check the units.

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Q38. Solve: $x^2 - 9 = 0$

ANSWER KEY & EXPLANATIONS

Q31. Correct Answer: D) 6/18

Explanation: Apply the stated formula carefully and check the units.

Q32. Correct Answer: B) 76

Explanation: Apply the stated formula carefully and check the units.

Q33. Correct Answer: B) 1/4

Explanation: Apply the stated formula carefully and check the units.

Q34. Correct Answer: A) 48

Explanation: Apply the stated formula carefully and check the units.

Q35. Correct Answer: B) 438

Explanation: Apply the stated formula carefully and check the units.

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aircraft?

ANSWER KEY & EXPLANATIONS

Q36. Correct Answer: C) $x = 11$

Explanation: Apply the stated formula carefully and check the units.

Q37. Correct Answer: A) 24

Explanation: Apply the stated formula carefully and check the units.

Q38. Correct Answer: C) $(x - 5)(x + 5)$

Explanation: Apply the stated formula carefully and check the units.

Q39. Correct Answer: B) $x = 10$

Explanation: Apply the stated formula carefully and check the units.

Q40. Correct Answer: A) 3

Explanation: Apply the stated formula carefully and check the units.

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stopover. What is the total airborne time?

ANSWER KEY & EXPLANATIONS

Q41. Correct Answer: D) 0.64

Explanation: Apply the stated formula carefully and check the units.

Q42. Correct Answer: C) 0.5

Explanation: Apply the stated formula carefully and check the units.

Q43. Correct Answer: C) 3.90 m

Explanation: Apply the stated formula carefully and check the units.

Q44. Correct Answer: B) 0.577

Explanation: Apply the stated formula carefully and check the units.

Q45. Correct Answer: A) 0.32

Explanation: Apply the stated formula carefully and check the units.

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