

✈ 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. While analysing a route map, A fuel reserve is 52% of a 11,000 L tank. How many litres are in reserve?

- A) 6,220 L
- B) 5,280 L
- C) 5,720 L
- D) 5,500 L

Q2. While analysing a route map, Express $7/(12)$ as a percentage, to 1 decimal place.

- A) 58.3%
- B) 42.0%
- C) 62.5%
- D) 37.5%

Q3. While analysing a route map, A pilot earns AED 38,000 monthly and receives a 11% increase. What is the new salary?

- A) AED 42,180
- B) AED 39,520
- C) AED 41,000
- D) AED 38,700

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Q4. While analysing a route map, Simplify: $8/\{13\} + 1/\{13\}$.

- A) $8/14$
- B) $9/13$
- C) $1/13$
- D) $9/22$

Q5. While analysing a route map, A flight carries 288 passengers. 29% are in business class. How many are in economy?

- A) 263
- B) 83
- C) 190
- D) 204

SECTION 2: Speed, Distance & Time

Q6. While analysing a route map, An aircraft travels at 500 knots for 4 hours 0 minutes. What distance does it cover?

- A) 1,500 NM
- B) 960 NM
- C) 2000 NM
- D) 1,200 NM

Q7. While analysing a route map, A jet covers 1,700 km in 4.0 hours. What is its average speed?

- A) 750 km/h
- B) 425 km/h
- C) 600 km/h
- D) 450 km/h

Q8. While analysing a route map, Convert 300 knots to km/h. (1 knot = 1.852 km/h)

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

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Q9. While analysing a route map, A flight route is 5,600 km long and the aircraft flies at 820 km/h. Estimate the flight time.

- A) 7.5 h
- B) 4.5 h
- C) 6.8 h
- D) 6.0 h

Q10. While analysing a route map, An aircraft descends from 34,800 ft at 1900 ft/min. How long does the descent take?

- A) 15 min
- B) 18 min
- C) 20 min
- D) 30 min

SECTION 3: Ratios & Scales

Q11. While analysing a route map, A chart has scale 1:500,000. A route measures 9 cm. What is the actual distance?

- A) 240 km
- B) 600 km
- C) 45 km
- D) 18 km

Q12. While analysing a route map, Fuel and additive are mixed in the ratio 10:1. If 66 L of fuel are used, how much additive is needed?

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

Q13. While analysing a route map, A bonus of AED 11,400 is shared in the ratio 2:3:4. What is the largest share?

- A) AED 4,000
- B) AED 2,000
- C) AED 5,066
- D) AED 3,000

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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. While analysing a route map, 8 engineers service 16 aircraft in 3 days. At the same rate, how many aircraft can 10 engineers service?

- A) 30 aircraft
- B) 18 aircraft
- C) 24 aircraft
- D) 20 aircraft

Q15. While analysing a route map, A runway is 8 cm on a map and 4.0 km in reality. What is the map scale?

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

SECTION 4: Unit Conversions

Q16. While analysing a route map, Convert 18,000 ft to metres. (1 ft = 0.3048 m)

- A) 4,572.0 m
- B) 5486.4 m
- C) 6,096.0 m
- D) 3,657.6 m

Q17. While analysing a route map, Convert 70,000 kg to pounds. (1 kg = 2.205 lb)

- A) 132,300 lb
- B) 154,350 lb
- C) 110,250 lb
- D) 165,375 lb

Q18. While analysing a route map, Convert 100°C to Fahrenheit. ($F = \frac{9}{5}C + 32$)

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

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- B) 8,165 kg

Q19. While analysing a route map, Convert 15,200 lb to kg. (1 lb = 0.4536 kg)

- A) 5,443.2 kg
- B) 7,257.6 kg
- C) 6,350.4 kg
- D) 6,894.7 kg

Q20. While analysing a route map, Convert 0.9 nautical miles to metres. (1 NM = 1,852 m)

- A) 926 m
- B) 1,852 m
- C) 1,389 m
- D) 1,667 m

SECTION 5: Powers, Roots & Surds

Q21. While analysing a route map, Calculate: $2^{\{9\}}$.

- A) 2048
- B) 512
- C) 256
- D) 1024

Q22. While analysing a route map, Simplify: $\sqrt{196}$.

- A) 24
- B) 16
- C) 14
- D) 12

Q23. While analysing a route map, Calculate: $(7)^2 - (5)^2$.

- A) 64
- B) 25
- C) 24
- D) 49

Q24. While analysing a route map, Evaluate: $((6)^2)^2$.

- A) 36
- B) 7776
- C) 216
- D) 1296

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- D) 729

Q25. While analysing a route map, Simplify: $\sqrt{0.00060}$.

- A) 0.024
- B) 0.007
- C) 0.014
- D) 0.070

SECTION 6: Areas, Volumes & Spaces

Q26. While analysing a route map, A rectangular hangar is 130 m long and 42 m wide. What is its area?

- A) 3,600 m²
- B) 6,000 m²
- C) 4,800 m²
- D) 5,460 m²

Q27. While analysing a route map, A cylindrical tank has radius 3.0 m and height 8 m. Find its volume ($\pi \approx 3.14$).

- A) 50.24 m³
- B) 226.08 m³
- C) 78.50 m³
- D) 31.40 m³

Q28. While analysing a route map, A triangular taxiway marking has base 9 m and height 7 m. What is its area?

- A) 30 m²
- B) 20 m²
- C) 31.5 m²
- D) 12 m²

Q29. While analysing a route map, The wingspan of an aircraft is 66 m. What is the radius of the circle swept by one wingtip?

- A) 33 m
- B) 32 m
- C) 64 m
- D) 20 m

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Q30. While analysing a route map, A cargo container measures 7 m × 6 m × 2.5 m. What is its volume?

- A) 105.0 m³
- B) 40.0 m³
- C) 20.0 m³
- D) 30.0 m³

SECTION 7: Probability & Statistics

Q31. While analysing a route map, A bag contains 8 red, 9 blue and 10 green balls. Probability of blue?

- A) $\frac{9}{27}$
- B) $\frac{1}{2}$
- C) $\frac{1}{3}$
- D) $\frac{2}{5}$

Q32. While analysing a route map, The scores are 72, 79, 86, 75, 83. What is the mean?

- A) 76
- B) 72
- C) 79
- D) 80

Q33. While analysing a route map, A die is rolled twice. Probability of getting a prime number on both rolls?

- A) $\frac{1}{4}$
- B) $\frac{1}{2}$
- C) $\frac{1}{3}$
- D) $\frac{1}{6}$

Q34. While analysing a route map, Find the range of: 16, 39, 25, 64, 32.

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

Q35. While analysing a route map, The average of 6 scores is 76. What is their total?

- A) 532
- B) 82
- C) 380
- D) 456

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SECTION 8: Algebraic Equations

Q36. While analysing a route map, Solve for x: $7x - 12 = 5x + 16$.

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

Q37. While analysing a route map, If $a = 6$ and $b = -5$, evaluate: $2a^2 - 3b$.

- A) 87
- B) 12
- C) 24
- D) 30

Q38. While analysing a route map, Factorise: $x^2 - 64$.

- A) $(x + 8)^2$
- B) $(x - 12)(x + 2)$
- C) $(x - 8)^2$
- D) $(x - 8)(x + 8)$

Q39. While analysing a route map, Solve for x: $2(x + 7) = 3x - 6$.

- A) $x = 14$
- B) $x = 4$
- C) $x = 10$
- D) $x = 16$

Q40. While analysing a route map, If $6x + 3y = 19$ and $y = 2$, find x.

- A) 2
- B) 1
- C) 5
- D) 3

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- B) 13 cm

SECTION 9: Trigonometry

Q41. While analysing a route map, In a right triangle, adjacent = 10 and hypotenuse = 14. What is $\cos \theta$?

- A) 0.50
- B) 1.20
- C) 0.75
- D) 0.71

Q42. While analysing a route map, What is $\sin(90^\circ)$?

- A) 0
- B) 1
- C) 0.5
- D) 0.866

Q43. While analysing a route map, A ladder 6.0 m long makes an angle of 60° with the ground. How high does it reach? ($\sin 60^\circ \approx 0.866$)

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

Q44. While analysing a route map, What is $\tan(0^\circ)$?

- A) 0.5
- B) $\sqrt{3}$
- C) 0.866
- D) 0

Q45. While analysing a route map, An aircraft is at 3,600 ft altitude and 10,000 ft from the runway along the glide path. What is $\sin$ of the glide angle?

- A) 0.20
- B) 0.60
- C) 0.40
- D) 0.36

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- B) 0.5

SECTION 10: Complex Operations

Q46. While analysing a route map, Calculate: $(180 \times 0.4) \div (14 \times 2)$.

- A) 2.6
- B) 1.5
- C) 2.0
- D) 3.0

Q47. While analysing a route map, A pilot works 11 h 35 min, 10 h 30 min and 8 h 45 min. What is the total?

- A) 24 h 30 min
- B) 26 h 15 min
- C) 30 h 50 min
- D) 22 h 00 min

Q48. While analysing a route map, An aircraft burns 1,800 kg/h. How much fuel is used in 3.33 h?

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

SECTION 11: Word Problems

Q49. While analysing a route map, A flight is delayed by 50 minutes. If the scheduled arrival was 14:10, what is the new arrival time?

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

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- A) 4h 55min

Q50. While analysing a route map, A team of 9 technicians can inspect an aircraft in 48 minutes. At the same rate, how long would 11 technicians take?

- A) 36.0 min
- B) 24.0 min
- C) 39.3 min
- D) 60.0 min

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ANSWER KEY & EXPLANATIONS

Q1. Correct Answer: C) 5,720 L

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

Q2. Correct Answer: A) 58.3%

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

Q3. Correct Answer: A) AED 42,180

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

Q4. Correct Answer: B) 9/13

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

Q5. Correct Answer: D) 204

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: C) 2000 NM

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

Q7. Correct Answer: B) 425 km/h

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

Q8. Correct Answer: A) 555.6 km/h

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

Q9. Correct Answer: C) 6.8 h

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

Q10. Correct Answer: B) 18 min

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

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ANSWER KEY & EXPLANATIONS

Q11. Correct Answer: C) 45 km

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

Q12. Correct Answer: D) 7 L

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

Q13. Correct Answer: C) AED 5,066

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

Q14. Correct Answer: D) 20 aircraft

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

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

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

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ANSWER KEY & EXPLANATIONS

Q16. Correct Answer: B) 5486.4 m

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

Q17. Correct Answer: B) 154,350 lb

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

Q18. Correct Answer: A) 212°F

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

Q19. Correct Answer: D) 6,894.7 kg

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

Q20. Correct Answer: D) 1,667 m

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

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ANSWER KEY & EXPLANATIONS

Q21. Correct Answer: B) 512

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

Q22. Correct Answer: C) 14

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

Q23. Correct Answer: C) 24

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

Q24. Correct Answer: D) 1296

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

Q25. Correct Answer: A) 0.024

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: D) 5,460 m²

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

Q27. Correct Answer: B) 226.08 m³

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

Q28. Correct Answer: C) 31.5 m²

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

Q29. Correct Answer: A) 33 m

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

Q30. Correct Answer: A) 105.0 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: A) 9/27

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

Q32. Correct Answer: C) 79

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

Q33. Correct Answer: A) 1/4

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

Q34. Correct Answer: C) 48

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

Q35. Correct Answer: D) 456

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

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aircraft?

ANSWER KEY & EXPLANATIONS

Q36. Correct Answer: A) $x = 14$

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

Q37. Correct Answer: A) 87

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

Q38. Correct Answer: D) $(x - 8)(x + 8)$

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

Q39. Correct Answer: D) $x = 16$

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

Q40. Correct Answer: A) 2

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) 0.71

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

Q42. Correct Answer: B) 1

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

Q43. Correct Answer: B) 5.20 m

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

Q44. Correct Answer: D) 0

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

Q45. Correct Answer: D) 0.36

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

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