

✈ 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 training-flight calculation, A fuel reserve is 55% of a 11,500 L tank. How many litres are in reserve?

- A) 5,750 L
- B) 6,325 L
- C) 6,825 L
- D) 5,175 L

Q2. During a training-flight calculation, Express $\frac{8}{13}$ as a percentage, to 1 decimal place.

- A) 62.5%
- B) 37.5%
- C) 61.5%
- D) 42.0%

Q3. During a training-flight calculation, A pilot earns AED 39,500 monthly and receives a 12% increase. What is the new salary?

- A) AED 40,200
- B) AED 42,500
- C) AED 44,240
- D) AED 41,475

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Q4. During a training-flight calculation, Simplify: $9/\{14\} + 1/\{14\}$.

- A) 10/23
- B) 1/14
- C) 5/7
- D) 9/15

Q5. During a training-flight calculation, A flight carries 300 passengers. 30% are in business class. How many are in economy?

- A) 90
- B) 275
- C) 195
- D) 210

SECTION 2: Speed, Distance & Time

Q6. During a training-flight calculation, An aircraft travels at 520 knots for 4 hours 30 minutes. What distance does it cover?

- A) 1,200 NM
- B) 2340 NM
- C) 960 NM
- D) 1,500 NM

Q7. During a training-flight calculation, A jet covers 1,825 km in 4.5 hours. What is its average speed?

- A) 450 km/h
- B) 750 km/h
- C) 600 km/h
- D) 406 km/h

Q8. During a training-flight calculation, Convert 325 knots to km/h. (1 knot = 1.852 km/h)

- A) 463.0 km/h
- B) 555.6 km/h
- C) 370.4 km/h
- D) 601.9 km/h

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Q9. During a training-flight calculation, A flight route is 5,950 km long and the aircraft flies at 850 km/h. Estimate the flight time.

- A) 6.0 h
- B) 7.5 h
- C) 7.0 h
- D) 4.5 h

Q10. During a training-flight calculation, An aircraft descends from 36,000 ft at 2000 ft/min. How long does the descent take?

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

SECTION 3: Ratios & Scales

Q11. During a training-flight calculation, A chart has scale 1:550,000. A route measures 10 cm. What is the actual distance?

- A) 55 km
- B) 600 km
- C) 18 km
- D) 240 km

Q12. During a training-flight calculation, Fuel and additive are mixed in the ratio 11:1. If 72 L of fuel are used, how much additive is needed?

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

Q13. During a training-flight calculation, A bonus of AED 12,000 is shared in the ratio 2:3:4. What is the largest share?

- A) AED 5,333
- B) AED 2,000
- C) AED 3,000
- D) AED 4,000

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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 training-flight calculation, 9 engineers service 17 aircraft in 3 days. At the same rate, how many aircraft can 11 engineers service?

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

Q15. During a training-flight calculation, A runway is 9 cm on a map and 4.5 km in reality. What is the map scale?

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

SECTION 4: Unit Conversions

Q16. During a training-flight calculation, Convert 19,500 ft to metres. (1 ft = 0.3048 m)

- A) 6,096.0 m
- B) 5943.6 m
- C) 4,572.0 m
- D) 3,657.6 m

Q17. During a training-flight calculation, Convert 75,000 kg to pounds. (1 kg = 2.205 lb)

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

Q18. During a training-flight calculation, Convert 105°C to Fahrenheit. ($F = \frac{9}{5}C + 32$)

- A) 212°F
- B) 221°F
- C) 176°F
- D) 248°F

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- B) 8,165 kg

Q19. During a training-flight calculation, Convert 16,000 lb to kg. (1 lb = 0.4536 kg)

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

Q20. During a training-flight calculation, Convert 1.0 nautical miles to metres. (1 NM = 1,852 m)

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

SECTION 5: Powers, Roots & Surds

Q21. During a training-flight calculation, Calculate: 2^{10} .

- A) 512
- B) 4096
- C) 2048
- D) 1024

Q22. During a training-flight calculation, Simplify: $\sqrt{225}$.

- A) 13
- B) 15
- C) 17
- D) 25

Q23. During a training-flight calculation, Calculate: $(8)^2 - (6)^2$.

- A) 36
- B) 28
- C) 64
- D) 81

Q24. During a training-flight calculation, Evaluate: $((7)^2)^2$.

- A) 343
- B) 49
- C) 2401
- D) 16807

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- D) 729

Q25. During a training-flight calculation, Simplify: $\sqrt{0.00070}$.

- A) 0.026
- B) 0.014
- C) 0.007
- D) 0.070

SECTION 6: Areas, Volumes & Spaces

Q26. During a training-flight calculation, A rectangular hangar is 140 m long and 45 m wide. What is its area?

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

Q27. During a training-flight calculation, A cylindrical tank has radius 3.5 m and height 9 m. Find its volume ($\pi \approx 3.14$).

- A) 31.40 m³
- B) 50.24 m³
- C) 78.50 m³
- D) 346.19 m³

Q28. During a training-flight calculation, A triangular taxiway marking has base 10 m and height 8 m. What is its area?

- A) 40.0 m²
- B) 20 m²
- C) 12 m²
- D) 30 m²

Q29. During a training-flight calculation, The wingspan of an aircraft is 70 m. What is the radius of the circle swept by one wingtip?

- A) 20 m
- B) 32 m
- C) 64 m
- D) 35 m

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Q30. During a training-flight calculation, A cargo container measures 8 m × 7 m × 2.5 m. What is its volume?

- A) 40.0 m³
- B) 30.0 m³
- C) 140.0 m³
- D) 20.0 m³

SECTION 7: Probability & Statistics

Q31. During a training-flight calculation, A bag contains 9 red, 10 blue and 11 green balls. Probability of blue?

- A) 1/2
- B) 10/30
- C) 2/5
- D) 1/3

Q32. During a training-flight calculation, The scores are 73, 80, 87, 76, 84. What is the mean?

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

Q33. During a training-flight calculation, A die is rolled twice. Probability of getting a number greater than 4 on both rolls?

- A) 1/3
- B) 1/2
- C) 1/9
- D) 1/6

Q34. During a training-flight calculation, Find the range of: 17, 40, 26, 65, 33.

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

Q35. During a training-flight calculation, The average of 6 scores is 77. What is their total?

- A) 385
- B) 539
- C) 83
- D) 462

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SECTION 8: Algebraic Equations

Q36. During a training-flight calculation, Solve for x : $8x - 13 = 6x + 17$.

- A) $x = 6$
- B) $x = 10$
- C) $x = 14$
- D) $x = 15$

Q37. During a training-flight calculation, If $a = 7$ and $b = -6$, evaluate: $2a^2 - 3b$.

- A) 12
- B) 24
- C) 30
- D) 116

Q38. During a training-flight calculation, Factorise: $x^2 - 81$.

- A) $(x - 9)^2$
- B) $(x - 13)(x + 2)$
- C) $(x - 9)(x + 9)$
- D) $(x + 9)^2$

Q39. During a training-flight calculation, Solve for x : $2(x + 8) = 3x - 7$.

- A) $x = 4$
- B) $x = 18$
- C) $x = 10$
- D) $x = 14$

Q40. During a training-flight calculation, If $7x + 3y = 20$ and $y = 2$, find x .

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

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- B) 13 cm

SECTION 9: Trigonometry

Q41. During a training-flight calculation, In a right triangle, adjacent = 11 and hypotenuse = 15. What is $\cos \theta$?

- A) 0.50
- B) 0.75
- C) 0.73
- D) 1.20

Q42. During a training-flight calculation, What is $\sin(0^\circ)$?

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

Q43. During a training-flight calculation, A ladder 6.5 m long makes an angle of 60° with the ground. How high does it reach? ($\sin 60^\circ \approx 0.866$)

- A) 5.63 m
- B) 3.46 m
- C) 5.20 m
- D) 2.00 m

Q44. During a training-flight calculation, What is $\tan(135^\circ)$?

- A) $\sqrt{3}$
- B) 0.866
- C) -1
- D) 0.5

Q45. During a training-flight calculation, An aircraft is at 3,900 ft altitude and 10,500 ft from the runway along the glide path. What is $\sin$ of the glide angle?

- A) 0.40
- B) 0.37
- C) 0.60
- D) 0.20

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- B) 0.5

SECTION 10: Complex Operations

Q46. During a training-flight calculation, Calculate: $(200 \times 0.4) \div (15 \times 2)$.

- A) 3.0
- B) 2.7
- C) 1.5
- D) 2.0

Q47. During a training-flight calculation, A pilot works 12 h 40 min, 11 h 30 min and 8 h 45 min. What is the total?

- A) 22 h 00 min
- B) 32 h 55 min
- C) 24 h 30 min
- D) 26 h 15 min

Q48. During a training-flight calculation, An aircraft burns 1,900 kg/h. How much fuel is used in 3.67 h?

- A) 6,967 kg
- B) 4,800 kg
- C) 3,200 kg
- D) 6,000 kg

SECTION 11: Word Problems

Q49. During a training-flight calculation, A flight is delayed by 55 minutes. If the scheduled arrival was 14:10, what is the new arrival time?

- A) 15:00
- B) 15:05
- C) 14:35
- D) 15:10

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- A) 4h 55min

Q50. During a training-flight calculation, A team of 10 technicians can inspect an aircraft in 48 minutes. At the same rate, how long would 12 technicians take?

- A) 36.0 min
- B) 24.0 min
- C) 40.0 min
- D) 60.0 min

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ANSWER KEY & EXPLANATIONS

Q1. Correct Answer: B) 6,325 L

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

Q2. Correct Answer: C) 61.5%

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

Q3. Correct Answer: C) AED 44,240

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

Q4. Correct Answer: C) 5/7

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

Q5. Correct Answer: D) 210

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: B) 2340 NM

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

Q7. Correct Answer: D) 406 km/h

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

Q8. Correct Answer: D) 601.9 km/h

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

Q9. Correct Answer: C) 7.0 h

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

Q10. Correct Answer: A) 18 min

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

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ANSWER KEY & EXPLANATIONS

Q11. Correct Answer: A) 55 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: A) AED 5,333

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

Q14. Correct Answer: A) 20 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: B) 5943.6 m

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

Q17. Correct Answer: A) 165,375 lb

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

Q18. Correct Answer: B) 221°F

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

Q19. Correct Answer: C) 7,257.6 kg

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

Q20. Correct Answer: B) 1,852 m

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

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ANSWER KEY & EXPLANATIONS

Q21. Correct Answer: D) 1024

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

Q22. Correct Answer: B) 15

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

Q23. Correct Answer: B) 28

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

Q24. Correct Answer: C) 2401

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

Q25. Correct Answer: A) 0.026

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: B) 6,300 m²

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

Q27. Correct Answer: D) 346.19 m³

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

Q28. Correct Answer: A) 40.0 m²

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

Q29. Correct Answer: D) 35 m

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

Q30. Correct Answer: C) 140.0 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: B) 10/30

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

Q32. Correct Answer: A) 80

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

Q33. Correct Answer: C) 1/9

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

Q34. Correct Answer: B) 48

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

Q35. Correct Answer: D) 462

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

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aircraft?

ANSWER KEY & EXPLANATIONS

Q36. Correct Answer: D) $x = 15$

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

Q37. Correct Answer: D) 116

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

Q38. Correct Answer: C) $(x - 9)(x + 9)$

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

Q39. Correct Answer: B) $x = 18$

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: C) 0.73

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

Q42. Correct Answer: B) 0

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

Q43. Correct Answer: A) 5.63 m

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

Q44. Correct Answer: C) -1

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

Q45. Correct Answer: B) 0.37

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

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