



EMIRATES AIRLINE PILOT APTITUDE TEST

MATHEMATICS — PRACTICE PAPER (Model G)

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

INSTRUCTIONS

- This paper contains 50 questions across 11 mathematical topics tested in the Emirates Airline COMPASS pilot aptitude assessment.
- Select the one best answer from four options (A, B, C, D) for each question.
- No calculator is permitted. All calculations must be performed mentally or on rough paper.
- Time allowed is 40 minutes. Aim to spend no more than 48 seconds per question.
- Attempt all questions. There is no negative marking.
- A full Answer Key with Explanations is provided at the end of this paper.

SECTION 1: Fractions & Percentages

Q1. A fuel reserve is 61% of a 12,500 L tank. How many litres are in reserve?

- A) 4,875 L
- B) 6,250 L
- C) 8,125 L
- D) 7,625 L

Q2. Express 10/(15) as a percentage, to 1 decimal place.

- A) 37.5%
- B) 66.7%
- C) 62.5%
- D) 42.0%

Q3. A pilot earns AED 42,500 monthly and receives a 14% increase. What is the new salary?

- A) AED 45,500
- B) AED 48,450
- C) AED 43,200
- D) AED 45,475

Q4. Simplify:

$$\frac{11}{\{16\}} + \frac{1}{\{16\}}$$

- A) 12/25
- B) 3/4
- C) 1/16
- D) 11/17

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Q5. A flight carries 324 passengers. 32% are in business class. How many are in economy?

- A) 220
- B) 103
- C) 299
- D) 204

SECTION 2: Speed, Distance & Time

Q6. An aircraft travels at 560 knots for 5 hours 30 minutes. What distance does it cover?

- A) 1,200 NM
- B) 960 NM
- C) 1,500 NM
- D) 3080 NM

Q7. A jet covers 2,075 km in 5.5 hours. What is its average speed?

- A) 750 km/h
- B) 600 km/h
- C) 377 km/h
- D) 450 km/h

Q8. Convert 375 knots to km/h. (1 knot = 1.852 km/h)

- A) 370.4 km/h
- B) 555.6 km/h
- C) 463.0 km/h
- D) 694.5 km/h

Q9. A flight route is 6,650 km long and the aircraft flies at 910 km/h. Estimate the flight time.

- A) 7.3 h
- B) 4.5 h
- C) 7.5 h
- D) 6.0 h

Q10. An aircraft descends from 38,400 ft at 2200 ft/min. How long does the descent take?

- A) 30 min
- B) 17 min
- C) 15 min
- D) 20 min

SECTION 3: Ratios & Scales

Q11. A chart has scale 1:650,000. A route measures 12 cm. What is the actual distance?

- A) 600 km
- B) 240 km
- C) 18 km
- D) 78 km

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Q12. Fuel and additive are mixed in the ratio 13:1. If 84 L of fuel are used, how much additive is needed?

- A) 5 L
- B) 8 L
- C) 12 L
- D) 6 L

Q13. A bonus of AED 13,200 is shared in the ratio 2:3:4. What is the largest share?

- A) AED 4,000
- B) AED 2,000
- C) AED 3,000
- D) AED 5,866

Q14. 11 engineers service 19 aircraft in 3 days. At the same rate, how many aircraft can 13 engineers service?

- A) 30 aircraft
- B) 24 aircraft
- C) 18 aircraft
- D) 22 aircraft

Q15. A runway is 11 cm on a map and 5.5 km in reality. What is the map scale?

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

SECTION 4: Unit Conversions

Q16. Convert 22,500 ft to metres. (1 ft = 0.3048 m)

- A) 6,096.0 m
- B) 4,572.0 m
- C) 3,657.6 m
- D) 6858.0 m

Q17. Convert 85,000 kg to pounds. (1 kg = 2.205 lb)

- A) 110,250 lb
- B) 132,300 lb
- C) 187,425 lb
- D) 165,375 lb

Q18. Convert 115°C to Fahrenheit. ($F = \frac{9}{5}C + 32$)

- A) 248°F
- B) 176°F
- C) 212°F
- D) 239°F

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Q19. Convert 17,600 lb to kg. (1 lb = 0.4536 kg)

- A) 5,443.2 kg
- B) 7,983.4 kg
- C) 6,350.4 kg
- D) 7,257.6 kg

Q20. Convert 1.2 nautical miles to metres. (1 NM = 1,852 m)

- A) 926 m
- B) 1,389 m
- C) 2,222 m
- D) 1,852 m

SECTION 5: Powers, Roots & Surds

Q21. Calculate: $2^{\{12\}}$.

- A) 8192
- B) 16384
- C) 4096
- D) 2048

Q22. Simplify: $\sqrt{289}$.

- A) 27
- B) 17
- C) 15
- D) 19

Q23. Calculate: $(10)^2 - (8)^2$.

- A) 121
- B) 36
- C) 64
- D) 100

Q24. Evaluate: $((9)^2)^2$.

- A) 6561
- B) 729
- C) 81
- D) 59049

Q25. Simplify: $\sqrt{0.00090}$.

- A) 0.030
- B) 0.070
- C) 0.014
- D) 0.007

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SECTION 6: Areas, Volumes & Spaces

Q26. A rectangular hangar is 160 m long and 51 m wide. What is its area?

- A) 6,000 m²
- B) 3,600 m²
- C) 4,800 m²
- D) 8,160 m²

Q27. A cylindrical tank has radius 4.5 m and height 11 m. Find its volume ($\pi \approx 3.14$).

- A) 31.40 m³
- B) 50.24 m³
- C) 78.50 m³
- D) 699.44 m³

Q28. A triangular taxiway marking has base 12 m and height 10 m. What is its area?

- A) 12 m²
- B) 60.0 m²
- C) 30 m²
- D) 20 m²

Q29. The wingspan of an aircraft is 78 m. What is the radius of the circle swept by one wingtip?

- A) 20 m
- B) 64 m
- C) 39 m
- D) 32 m

Q30. A cargo container measures 10 m $\times$ 9 m $\times$ 2.5 m. What is its volume?

- A) 225.0 m³
- B) 30.0 m³
- C) 20.0 m³
- D) 40.0 m³

SECTION 7: Probability & Statistics

Q31. A bag contains 11 red, 12 blue and 13 green balls. Probability of blue?

- A) 1/2
- B) 12/36
- C) 1/3
- D) 2/5

Q32. The scores are 75, 82, 89, 78, 86. What is the mean?

- A) 76
- B) 80
- C) 72
- D) 82

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Q33. A die is rolled twice. Probability of getting at least one 6?

- A) $\frac{1}{2}$
- B) $\frac{1}{6}$
- C) $\frac{1}{3}$
- D) $\frac{11}{36}$

Q34. Find the range of: 19, 42, 28, 67, 35.

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

Q35. The average of 6 scores is 79. What is their total?

- A) 474
- B) 395
- C) 85
- D) 553

SECTION 8: Algebraic Equations

Q36. Solve for x: $10x - 15 = 8x + 19$.

- A) $x = 10$
- B) $x = 14$
- C) $x = 17$
- D) $x = 6$

Q37. If $a = 9$ and $b = -8$, evaluate: $2a^2 - 3b$.

- A) 12
- B) 30
- C) 24
- D) 186

Q38. Factorise: $x^2 - 121$.

- A) $(x - 15)(x + 2)$
- B) $(x - 11)^2$
- C) $(x - 11)(x + 11)$
- D) $(x + 11)^2$

Q39. Solve for x: $2(x + 10) = 3x - 9$.

- A) $x = 22$
- B) $x = 10$
- C) $x = 4$
- D) $x = 14$

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Q40. If $9x + 3y = 22$ and $y = 2$, find x .

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

SECTION 9: Trigonometry

Q41. In a right triangle, adjacent = 13 and hypotenuse = 17. What is $\cos \theta$?

- A) 0.76
- B) 0.50
- C) 1.20
- D) 0.75

Q42. What is $\sin(270^\circ)$?

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

Q43. A ladder 7.5 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) 2.00 m
- C) 6.50 m
- D) 5.20 m

Q44. What is $\tan(180^\circ)$?

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

Q45. An aircraft is at 4,500 ft altitude and 11,500 ft from the runway along the glide path. What is $\sin$ of the glide angle?

- A) 0.60
- B) 0.20
- C) 0.40
- D) 0.39

SECTION 10: Complex Operations

Q46. Calculate: $(240 \times 0.4) \div (17 \times 2)$.

- A) 2.8
- B) 3.0
- C) 2.0
- D) 1.5

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Q47. A pilot works 14 h 50 min, 13 h 30 min and 8 h 45 min. What is the total?

- A) 37 h 05 min
- B) 26 h 15 min
- C) 22 h 00 min
- D) 24 h 30 min

Q48. An aircraft burns 2,100 kg/h. How much fuel is used in 4.33 h?

- A) 4,800 kg
- B) 9,100 kg
- C) 6,000 kg
- D) 3,200 kg

SECTION 11: Word Problems

Q49. A flight is delayed by 65 minutes. If the scheduled arrival was 14:10, what is the new arrival time?

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

Q50. A team of 12 technicians can inspect an aircraft in 48 minutes. At the same rate, how long would 14 technicians take?

- A) 36.0 min
- B) 60.0 min
- C) 24.0 min
- D) 41.1 min

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ANSWER KEY & EXPLANATIONS

SECTION 1: Fractions & Percentages

Q1. Correct answer: D) 7,625 L — The calculation gives 7,625 L.

Q2. Correct answer: B) 66.7% — The calculation gives 66.7%.

Q3. Correct answer: B) AED 48,450 — The calculation gives AED 48,450.

Q4. Correct answer: B) $\frac{3}{4}$ — The calculation gives $\frac{3}{4}$.

Q5. Correct answer: A) 220 — The calculation gives 220.

SECTION 2: Speed, Distance & Time

Q6. Correct answer: D) 3080 NM — The calculation gives 3080 NM.

Q7. Correct answer: C) 377 km/h — The calculation gives 377 km/h.

Q8. Correct answer: D) 694.5 km/h — The calculation gives 694.5 km/h.

Q9. Correct answer: A) 7.3 h — The calculation gives 7.3 h.

Q10. Correct answer: B) 17 min — The calculation gives 17 min.

SECTION 3: Ratios & Scales

Q11. Correct answer: D) 78 km — The calculation gives 78 km.

Q12. Correct answer: D) 6 L — The calculation gives 6 L.

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Q13. Correct answer: D) AED 5,866 — The calculation gives AED 5,866.

Q14. Correct answer: D) 22 aircraft — The calculation gives 22 aircraft.

Q15. Correct answer: A) 1:50,000 — The calculation gives 1:50,000.

SECTION 4: Unit Conversions

Q16. Correct answer: D) 6858.0 m — The calculation gives 6858.0 m.

Q17. Correct answer: C) 187,425 lb — The calculation gives 187,425 lb.

Q18. Correct answer: D) 239°F — The calculation gives 239°F.

Q19. Correct answer: B) 7,983.4 kg — The calculation gives 7,983.4 kg.

Q20. Correct answer: C) 2,222 m — The calculation gives 2,222 m.

SECTION 5: Powers, Roots & Surds

Q21. Correct answer: C) 4096 — The calculation gives 4096.

Q22. Correct answer: B) 17 — The calculation gives 17.

Q23. Correct answer: B) 36 — The calculation gives 36.

Q24. Correct answer: A) 6561 — The calculation gives 6561.

Q25. Correct answer: A) 0.030 — The calculation gives 0.030.

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SECTION 6: Areas, Volumes & Spaces

- Q26. Correct answer: D) $8,160 \text{ m}^2$ — The calculation gives $8,160 \text{ m}^2$.
- Q27. Correct answer: D) 699.44 m^3 — The calculation gives 699.44 m^3 .
- Q28. Correct answer: B) 60.0 m^2 — The calculation gives 60.0 m^2 .
- Q29. Correct answer: C) 39 m — The calculation gives 39 m .
- Q30. Correct answer: A) 225.0 m^3 — The calculation gives 225.0 m^3 .

SECTION 7: Probability & Statistics

- Q31. Correct answer: B) $12/36$ — The calculation gives $12/36$.
- Q32. Correct answer: D) 82 — The calculation gives 82 .
- Q33. Correct answer: D) $11/36$ — The calculation gives $11/36$.
- Q34. Correct answer: A) 48 — The calculation gives 48 .
- Q35. Correct answer: A) 474 — The calculation gives 474 .

SECTION 8: Algebraic Equations

- Q36. Correct answer: C) $x = 17$ — The calculation gives $x = 17$.
- Q37. Correct answer: D) 186 — The calculation gives 186 .
- Q38. Correct answer: C) $(x - 11)(x + 11)$ — The calculation gives $(x - 11)(x + 11)$.

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Q39. Correct answer: A) $x = 22$ — The calculation gives $x = 22$.

Q40. Correct answer: D) 2 — The calculation gives 2.

SECTION 9: Trigonometry

Q41. Correct answer: A) 0.76 — The calculation gives 0.76.

Q42. Correct answer: C) -1 — The calculation gives -1.

Q43. Correct answer: C) 6.50 m — The calculation gives 6.50 m.

Q44. Correct answer: C) 0 — The calculation gives 0.

Q45. Correct answer: D) 0.39 — The calculation gives 0.39.

SECTION 10: Complex Operations

Q46. Correct answer: A) 2.8 — The calculation gives 2.8.

Q47. Correct answer: A) 37 h 05 min — The calculation gives 37 h 05 min.

Q48. Correct answer: B) 9,100 kg — The calculation gives 9,100 kg.

SECTION 11: Word Problems

Q49. Correct answer: C) 15:15 — The calculation gives 15:15.

Q50. Correct answer: D) 41.1 min — The calculation gives 41.1 min.

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