



EMIRATES AIRLINE PILOT APTITUDE

TEST

MATHEMATICS — PRACTICE PAPER (Model E)

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 55% of a 11,500 L tank. How many litres are in reserve?

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

Q2. Express $\frac{8}{13}$ as a percentage, to 1 decimal place.

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

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

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

Q4. Simplify:

$$\frac{9}{\{14\}} + \frac{1}{\{14\}}$$

- A) $\frac{9}{15}$
- B) $\frac{10}{23}$
- C) $\frac{5}{7}$
- D) $\frac{1}{14}$

العلم نور، والجهل ظلام.

Q5. A flight carries 300 passengers. 30% are in business class. How many are in economy?

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

SECTION 2: Speed, Distance & Time

Q6. An aircraft travels at 520 knots for 4 hours 30 minutes. What distance does it cover?

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

Q7. A jet covers 1,825 km in 4.5 hours. What is its average speed?

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

Q8. Convert 325 knots to km/h. (1 knot = 1.852 km/h)

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

Q9. 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) 4.5 h
- C) 7.0 h
- D) 7.5 h

Q10. An aircraft descends from 36,000 ft at 2000 ft/min. How long does the descent take?

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

SECTION 3: Ratios & Scales

Q11. A chart has scale 1:550,000. A route measures 10 cm. What is the actual distance?

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

بالعلم يتحول الطموح إلى إنجاز.

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

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

Q13. 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 3,000
- C) AED 2,000
- D) AED 4,000

Q14. 9 engineers service 17 aircraft in 3 days. At the same rate, how many aircraft can 11 engineers service?

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

Q15. A runway is 9 cm on a map and 4.5 km in reality. What is the map scale?

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

SECTION 4: Unit Conversions

Q16. Convert 19,500 ft to metres. (1 ft = 0.3048 m)

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

Q17. Convert 75,000 kg to pounds. (1 kg = 2.205 lb)

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

Q18. Convert 105°C to Fahrenheit. ($F = \frac{9}{5}C + 32$)

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

العقل المنظم يصنع الحلول.

Q19. Convert 16,000 lb to kg. (1 lb = 0.4536 kg)

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

Q20. 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. Calculate: $2^{\{10\}}$.

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

Q22. Simplify: $\sqrt{225}$.

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

Q23. Calculate: $(8)^2 - (6)^2$.

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

Q24. Evaluate: $((7)^2)^2$.

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

Q25. Simplify: $\sqrt{0.00070}$.

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

اسأل، وتعلم، ثم طبق ما تعلمت.

SECTION 6: Areas, Volumes & Spaces

Q26. A rectangular hangar is 140 m long and 45 m wide. What is its area?

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

Q27. A cylindrical tank has radius 3.5 m and height 9 m. Find its volume ($\pi \approx 3.14$).

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

Q28. A triangular taxiway marking has base 10 m and height 8 m. What is its area?

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

Q29. The wingspan of an aircraft is 70 m. What is the radius of the circle swept by one wingtip?

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

Q30. A cargo container measures 8 m $\times$ 7 m $\times$ 2.5 m. What is its volume?

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

SECTION 7: Probability & Statistics

Q31. A bag contains 9 red, 10 blue and 11 green balls. Probability of blue?

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

Q32. The scores are 73, 80, 87, 76, 84. What is the mean?

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

كل خطوة في طريق العلم تقدم.

Q33. A die is rolled twice. Probability of getting a number greater than 4 on both rolls?

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

Q34. Find the range of: 17, 40, 26, 65, 33.

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

Q35. The average of 6 scores is 77. What is their total?

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

SECTION 8: Algebraic Equations

Q36. Solve for x: $8x - 13 = 6x + 17$.

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

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

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

Q38. Factorise: $x^2 - 81$.

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

Q39. Solve for x: $2(x + 8) = 3x - 7$.

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

من جد في التعلم بلغ هدفه.

Q40. If $7x + 3y = 20$ and $y = 2$, find x .

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

SECTION 9: Trigonometry

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

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

Q42. What is $\sin(0^\circ)$?

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

Q43. 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) 5.20 m
- B) 3.46 m
- C) 5.63 m
- D) 2.00 m

Q44. What is $\tan(135^\circ)$?

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

Q45. 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) 0.60
- B) 0.37
- C) 0.20
- D) 0.40

SECTION 10: Complex Operations

Q46. Calculate: $(200 \times 0.4) \div (15 \times 2)$.

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

ثابر؛ فالفهم يبنى بالتدرج.

Q47. 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) 24 h 30 min
- C) 26 h 15 min
- D) 32 h 55 min

Q48. An aircraft burns 1,900 kg/h. How much fuel is used in 3.67 h?

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

SECTION 11: Word Problems

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

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

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

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

كل خطوة في طريق العلم تقدم.

AURA

ANSWER KEY & EXPLANATIONS

SECTION 1: Fractions & Percentages

- Q1. Correct answer: A) 6,325 L — The calculation gives 6,325 L.
- Q2. Correct answer: B) 61.5% — The calculation gives 61.5%.
- Q3. Correct answer: C) AED 44,240 — The calculation gives AED 44,240.
- Q4. Correct answer: C) 5/7 — The calculation gives 5/7.
- Q5. Correct answer: D) 210 — The calculation gives 210.

SECTION 2: Speed, Distance & Time

- Q6. Correct answer: B) 2340 NM — The calculation gives 2340 NM.
- Q7. Correct answer: C) 406 km/h — The calculation gives 406 km/h.
- Q8. Correct answer: B) 601.9 km/h — The calculation gives 601.9 km/h.
- Q9. Correct answer: C) 7.0 h — The calculation gives 7.0 h.
- Q10. Correct answer: B) 18 min — The calculation gives 18 min.

SECTION 3: Ratios & Scales

- Q11. Correct answer: A) 55 km — The calculation gives 55 km.
- Q12. Correct answer: A) 7 L — The calculation gives 7 L.

النجاح يبدأ بفكرة وفهم.

Q13. Correct answer: A) AED 5,333 — The calculation gives AED 5,333.

Q14. Correct answer: B) 20 aircraft — The calculation gives 20 aircraft.

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

SECTION 4: Unit Conversions

Q16. Correct answer: A) 5943.6 m — The calculation gives 5943.6 m.

Q17. Correct answer: A) 165,375 lb — The calculation gives 165,375 lb.

Q18. Correct answer: C) 221°F — The calculation gives 221°F.

Q19. Correct answer: C) 7,257.6 kg — The calculation gives 7,257.6 kg.

Q20. Correct answer: B) 1,852 m — The calculation gives 1,852 m.

SECTION 5: Powers, Roots & Surds

Q21. Correct answer: D) 1024 — The calculation gives 1024.

Q22. Correct answer: C) 15 — The calculation gives 15.

Q23. Correct answer: C) 28 — The calculation gives 28.

Q24. Correct answer: A) 2401 — The calculation gives 2401.

Q25. Correct answer: A) 0.026 — The calculation gives 0.026.

من جد في التعلم بلغ هدفه.

AURA

SECTION 6: Areas, Volumes & Spaces

- Q26. Correct answer: D) $6,300 \text{ m}^2$ — The calculation gives $6,300 \text{ m}^2$.
- Q27. Correct answer: C) 346.19 m^3 — The calculation gives 346.19 m^3 .
- Q28. Correct answer: B) 40.0 m^2 — The calculation gives 40.0 m^2 .
- Q29. Correct answer: B) 35 m — The calculation gives 35 m .
- Q30. Correct answer: C) 140.0 m^3 — The calculation gives 140.0 m^3 .

SECTION 7: Probability & Statistics

- Q31. Correct answer: D) $10/30$ — The calculation gives $10/30$.
- Q32. Correct answer: A) 80 — The calculation gives 80 .
- Q33. Correct answer: D) $1/9$ — The calculation gives $1/9$.
- Q34. Correct answer: A) 48 — The calculation gives 48 .
- Q35. Correct answer: D) 462 — The calculation gives 462 .

SECTION 8: Algebraic Equations

- Q36. Correct answer: A) $x = 15$ — The calculation gives $x = 15$.
- Q37. Correct answer: A) 116 — The calculation gives 116 .
- Q38. Correct answer: A) $(x - 9)(x + 9)$ — The calculation gives $(x - 9)(x + 9)$.

العلم رحلة، وكل سؤال محطة.

Q39. Correct answer: C) $x = 18$ — The calculation gives $x = 18$.

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

SECTION 9: Trigonometry

Q41. Correct answer: B) 0.73 — The calculation gives 0.73.

Q42. Correct answer: C) 0 — The calculation gives 0.

Q43. Correct answer: C) 5.63 m — The calculation gives 5.63 m.

Q44. Correct answer: A) -1 — The calculation gives -1.

Q45. Correct answer: B) 0.37 — The calculation gives 0.37.

SECTION 10: Complex Operations

Q46. Correct answer: A) 2.7 — The calculation gives 2.7.

Q47. Correct answer: D) 32 h 55 min — The calculation gives 32 h 55 min.

Q48. Correct answer: A) 6,967 kg — The calculation gives 6,967 kg.

SECTION 11: Word Problems

Q49. Correct answer: D) 15:05 — The calculation gives 15:05.

Q50. Correct answer: B) 40.0 min — The calculation gives 40.0 min.

ثابر؛ فالفهم بينى بالتدرج.

[End of Model]
