



EMIRATES AIRLINE PILOT APTITUDE

TEST

MATHEMATICS — PRACTICE PAPER (Model C)

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 49% of a 10,500 L tank. How many litres are in reserve?

- A) 5,145 L
- B) 5,355 L
- C) 5,645 L
- D) 5,250 L

Q2. Express $6/11$ as a percentage, to 1 decimal place.

- A) 54.5%
- B) 62.5%
- C) 42.0%
- D) 37.5%

Q3. A pilot earns AED 36,500 monthly and receives a 10% increase. What is the new salary?

- A) AED 40,150
- B) AED 37,595
- C) AED 37,200
- D) AED 39,500

Q4. Simplify:

$$\frac{7}{\{12\}} + \frac{1}{\{12\}}$$

- A) $1/12$
- B) $7/13$
- C) $2/3$
- D) $8/21$

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Q5. A flight carries 276 passengers. 28% are in business class. How many are in economy?

- A) 184
- B) 251
- C) 77
- D) 198

SECTION 2: Speed, Distance & Time

Q6. An aircraft travels at 480 knots for 3 hours 30 minutes. What distance does it cover?

- A) 1,500 NM
- B) 1,200 NM
- C) 960 NM
- D) 1680 NM

Q7. A jet covers 1,575 km in 3.5 hours. What is its average speed?

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

Q8. Convert 275 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) 509.3 km/h

Q9. A flight route is 5,250 km long and the aircraft flies at 790 km/h. Estimate the flight time.

- A) 6.0 h
- B) 4.5 h
- C) 7.5 h
- D) 6.6 h

Q10. An aircraft descends from 33,600 ft at 1800 ft/min. How long does the descent take?

- A) 15 min
- B) 30 min
- C) 19 min
- D) 20 min

SECTION 3: Ratios & Scales

Q11. A chart has scale 1:450,000. A route measures 8 cm. What is the actual distance?

- A) 240 km
- B) 18 km
- C) 36 km
- D) 600 km

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Q12. Fuel and additive are mixed in the ratio 9:1. If 60 L of fuel are used, how much additive is needed?

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

Q13. A bonus of AED 10,800 is shared in the ratio 2:3:4. What is the largest share?

- A) AED 3,000
- B) AED 4,800
- C) AED 2,000
- D) AED 4,000

Q14. 7 engineers service 15 aircraft in 3 days. At the same rate, how many aircraft can 9 engineers service?

- A) 19 aircraft
- B) 24 aircraft
- C) 30 aircraft
- D) 18 aircraft

Q15. A runway is 7 cm on a map and 3.5 km in reality. What is the map scale?

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

SECTION 4: Unit Conversions

Q16. Convert 16,500 ft to metres. (1 ft = 0.3048 m)

- A) 5029.2 m
- B) 6,096.0 m
- C) 4,572.0 m
- D) 3,657.6 m

Q17. Convert 65,000 kg to pounds. (1 kg = 2.205 lb)

- A) 132,300 lb
- B) 165,375 lb
- C) 143,325 lb
- D) 110,250 lb

Q18. Convert 95°C to Fahrenheit. ($F = \frac{9}{5}C + 32$)

- A) 203°F
- B) 248°F
- C) 212°F
- D) 176°F

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Q19. Convert 14,400 lb to kg. (1 lb = 0.4536 kg)

- A) 6,531.8 kg
- B) 5,443.2 kg
- C) 6,350.4 kg
- D) 7,257.6 kg

Q20. Convert 0.8 nautical miles to metres. (1 NM = 1,852 m)

- A) 1,482 m
- B) 1,852 m
- C) 1,389 m
- D) 926 m

SECTION 5: Powers, Roots & Surds

Q21. Calculate: $2^{\{8\}}$.

- A) 128
- B) 512
- C) 256
- D) 1024

Q22. Simplify: $\sqrt{169}$.

- A) 23
- B) 11
- C) 15
- D) 13

Q23. Calculate: $(6)^2 - (4)^2$.

- A) 20
- B) 49
- C) 16
- D) 36

Q24. Evaluate: $((5)^2)^2$.

- A) 3125
- B) 25
- C) 625
- D) 125

Q25. Simplify: $\sqrt{0.00050}$.

- A) 0.022
- B) 0.014
- C) 0.007
- D) 0.070

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SECTION 6: Areas, Volumes & Spaces

Q26. A rectangular hangar is 120 m long and 39 m wide. What is its area?

- A) 3,600 m²
- B) 4,680 m²
- C) 4,800 m²
- D) 6,000 m²

Q27. A cylindrical tank has radius 2.5 m and height 7 m. Find its volume ($\pi \approx 3.14$).

- A) 78.50 m³
- B) 31.40 m³
- C) 50.24 m³
- D) 137.38 m³

Q28. A triangular taxiway marking has base 8 m and height 6 m. What is its area?

- A) 20 m²
- B) 12 m²
- C) 30 m²
- D) 24.0 m²

Q29. The wingspan of an aircraft is 62 m. What is the radius of the circle swept by one wingtip?

- A) 32 m
- B) 64 m
- C) 31 m
- D) 20 m

Q30. A cargo container measures 6 m × 5 m × 2.5 m. What is its volume?

- A) 75.0 m³
- B) 20.0 m³
- C) 30.0 m³
- D) 40.0 m³

SECTION 7: Probability & Statistics

Q31. A bag contains 7 red, 8 blue and 9 green balls. Probability of blue?

- A) 2/5
- B) 1/3
- C) 1/2
- D) 8/24

Q32. The scores are 71, 78, 85, 74, 82. What is the mean?

- A) 78
- B) 72
- C) 80
- D) 76

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Q33. A die is rolled twice. Probability of getting a 6 on both rolls?

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

Q34. Find the range of: 15, 38, 24, 63, 31.

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

Q35. The average of 6 scores is 75. What is their total?

- A) 375
- B) 81
- C) 450
- D) 525

SECTION 8: Algebraic Equations

Q36. Solve for x: $6x - 11 = 4x + 15$.

- A) $x = 14$
- B) $x = 6$
- C) $x = 13$
- D) $x = 10$

Q37. If $a = 5$ and $b = -4$, evaluate: $2a^2 - 3b$.

- A) 12
- B) 24
- C) 30
- D) 62

Q38. Factorise: $x^2 - 49$.

- A) $(x + 7)^2$
- B) $(x - 7)(x + 7)$
- C) $(x - 11)(x + 2)$
- D) $(x - 7)^2$

Q39. Solve for x: $2(x + 6) = 3x - 5$.

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

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Q40. If $5x + 3y = 18$ and $y = 2$, find x .

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

SECTION 9: Trigonometry

Q41. In a right triangle, adjacent = 9 and hypotenuse = 13. What is $\cos \theta$?

- A) 0.50
- B) 1.20
- C) 0.69
- D) 0.75

Q42. What is $\sin(60^\circ)$?

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

Q43. A ladder 5.5 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) 4.76 m
- C) 5.20 m
- D) 2.00 m

Q44. What is $\tan(60^\circ)$?

- A) 0.866
- B) 1.732
- C) 0.5
- D) $\sqrt{3}$

Q45. An aircraft is at 3,300 ft altitude and 9,500 ft from the runway along the glide path. What is $\sin$ of the glide angle?

- A) 0.40
- B) 0.35
- C) 0.60
- D) 0.20

SECTION 10: Complex Operations

Q46. Calculate: $(160 \times 0.4) \div (13 \times 2)$.

- A) 2.0
- B) 1.5
- C) 2.5
- D) 3.0

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Q47. A pilot works 10 h 30 min, 9 h 30 min and 8 h 45 min. What is the total?

- A) 26 h 15 min
- B) 22 h 00 min
- C) 28 h 45 min
- D) 24 h 30 min

Q48. An aircraft burns 1,700 kg/h. How much fuel is used in 3.00 h?

- A) 3,200 kg
- B) 4,800 kg
- C) 6,000 kg
- D) 5,100 kg

SECTION 11: Word Problems

Q49. A flight is delayed by 45 minutes. If the scheduled arrival was 14:10, what is the new arrival time?

- A) 14:55
- B) 14:35
- C) 15:00
- D) 15:10

Q50. A team of 8 technicians can inspect an aircraft in 48 minutes. At the same rate, how long would 10 technicians take?

- A) 60.0 min
- B) 38.4 min
- C) 36.0 min
- D) 24.0 min

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ANSWER KEY & EXPLANATIONS

SECTION 1: Fractions & Percentages

- Q1. Correct answer: A) 5,145 L — The calculation gives 5,145 L.
- Q2. Correct answer: A) 54.5% — The calculation gives 54.5%.
- Q3. Correct answer: A) AED 40,150 — The calculation gives AED 40,150.
- Q4. Correct answer: C) $\frac{2}{3}$ — The calculation gives $\frac{2}{3}$.
- Q5. Correct answer: D) 198 — The calculation gives 198.

SECTION 2: Speed, Distance & Time

- Q6. Correct answer: D) 1680 NM — The calculation gives 1680 NM.
- Q7. Correct answer: A) 450 km/h — The calculation gives 450 km/h.
- Q8. Correct answer: D) 509.3 km/h — The calculation gives 509.3 km/h.
- Q9. Correct answer: D) 6.6 h — The calculation gives 6.6 h.
- Q10. Correct answer: C) 19 min — The calculation gives 19 min.

SECTION 3: Ratios & Scales

- Q11. Correct answer: C) 36 km — The calculation gives 36 km.
- Q12. Correct answer: C) 7 L — The calculation gives 7 L.

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Q13. Correct answer: B) AED 4,800 — The calculation gives AED 4,800.

Q14. Correct answer: A) 19 aircraft — The calculation gives 19 aircraft.

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

SECTION 4: Unit Conversions

Q16. Correct answer: A) 5029.2 m — The calculation gives 5029.2 m.

Q17. Correct answer: C) 143,325 lb — The calculation gives 143,325 lb.

Q18. Correct answer: A) 203°F — The calculation gives 203°F.

Q19. Correct answer: A) 6,531.8 kg — The calculation gives 6,531.8 kg.

Q20. Correct answer: A) 1,482 m — The calculation gives 1,482 m.

SECTION 5: Powers, Roots & Surds

Q21. Correct answer: C) 256 — The calculation gives 256.

Q22. Correct answer: D) 13 — The calculation gives 13.

Q23. Correct answer: A) 20 — The calculation gives 20.

Q24. Correct answer: C) 625 — The calculation gives 625.

Q25. Correct answer: A) 0.022 — The calculation gives 0.022.

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SECTION 6: Areas, Volumes & Spaces

- Q26. Correct answer: B) $4,680 \text{ m}^2$ — The calculation gives $4,680 \text{ m}^2$.
- Q27. Correct answer: D) 137.38 m^3 — The calculation gives 137.38 m^3 .
- Q28. Correct answer: D) 24.0 m^2 — The calculation gives 24.0 m^2 .
- Q29. Correct answer: C) 31 m — The calculation gives 31 m .
- Q30. Correct answer: A) 75.0 m^3 — The calculation gives 75.0 m^3 .

SECTION 7: Probability & Statistics

- Q31. Correct answer: D) $8/24$ — The calculation gives $8/24$.
- Q32. Correct answer: A) 78 — The calculation gives 78 .
- Q33. Correct answer: B) $1/36$ — The calculation gives $1/36$.
- Q34. Correct answer: C) 48 — The calculation gives 48 .
- Q35. Correct answer: C) 450 — The calculation gives 450 .

SECTION 8: Algebraic Equations

- Q36. Correct answer: C) $x = 13$ — The calculation gives $x = 13$.
- Q37. Correct answer: D) 62 — The calculation gives 62 .
- Q38. Correct answer: B) $(x - 7)(x + 7)$ — The calculation gives $(x - 7)(x + 7)$.

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Q39. Correct answer: B) $x = 14$ — The calculation gives $x = 14$.

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

SECTION 9: Trigonometry

Q41. Correct answer: C) 0.69 — The calculation gives 0.69.

Q42. Correct answer: A) 0.866 — The calculation gives 0.866.

Q43. Correct answer: B) 4.76 m — The calculation gives 4.76 m.

Q44. Correct answer: B) 1.732 — The calculation gives 1.732.

Q45. Correct answer: B) 0.35 — The calculation gives 0.35.

SECTION 10: Complex Operations

Q46. Correct answer: C) 2.5 — The calculation gives 2.5.

Q47. Correct answer: C) 28 h 45 min — The calculation gives 28 h 45 min.

Q48. Correct answer: D) 5,100 kg — The calculation gives 5,100 kg.

SECTION 11: Word Problems

Q49. Correct answer: A) 14:55 — The calculation gives 14:55.

Q50. Correct answer: B) 38.4 min — The calculation gives 38.4 min.

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