



StuckMic.com AT-SAT Study Guide

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Introduction

This study guide has been put together to help you with three of the eight sections in the Air Traffic Standardized Aptitude Test (AT-SAT), one of several prerequisites for employment as an Air Traffic Control specialist with the Federal Aviation Administration. Questions for each practice section are similar to those that you'll find in the actual AT-SAT. Each section begins with a short introduction and explanation of what to expect, and a suggested time in which to complete the questions (based upon the amount of time given per question on the AT-SAT). Answers can be found at the end of this guide.

Two of the remaining sections, Scenarios and Scan, can be practiced using games on Jeremy Justice's website at <http://jeremyjustice.com/games/index.html>¹. Both are well-made and are similar to the AT-SAT versions, with some minor differences. Of the remaining three, we have yet to find a good practice version for Letter Factory (one exists in an AT-SAT study book, although it has some errors that discourage us from recommending its use), and we currently don't have any plans in place to create a guide for Analogies. Personality, the final section, is not scored and not something which can really be improved by practice. Also, if you're looking for a more extensive commentary on what to expect from the AT-SAT, take a look at the StuckMic article *What to Expect From the AT-SAT*, which you can find at <http://www.stuckmic.com/miscellaneous-aviation-information/892-what-expect-sat.html>.

This guide should have been obtained for free at StuckMic.com. If you have found it anywhere else, and especially if you had to pay to get it, please let us know and we'll set things straight.

On behalf of the StuckMic team, good luck on the AT-SAT and in the application process. If you have any questions on what to expect, want to trade stories with other applicants, or would just like to rub elbows with your future coworkers, drop by www.stuckmic.com any time.

¹ If you're having trouble getting the Scan game to work, try linking to it directly at <http://jeremyjustice.com/games/scan/scan.swf>.

Dials

25 questions

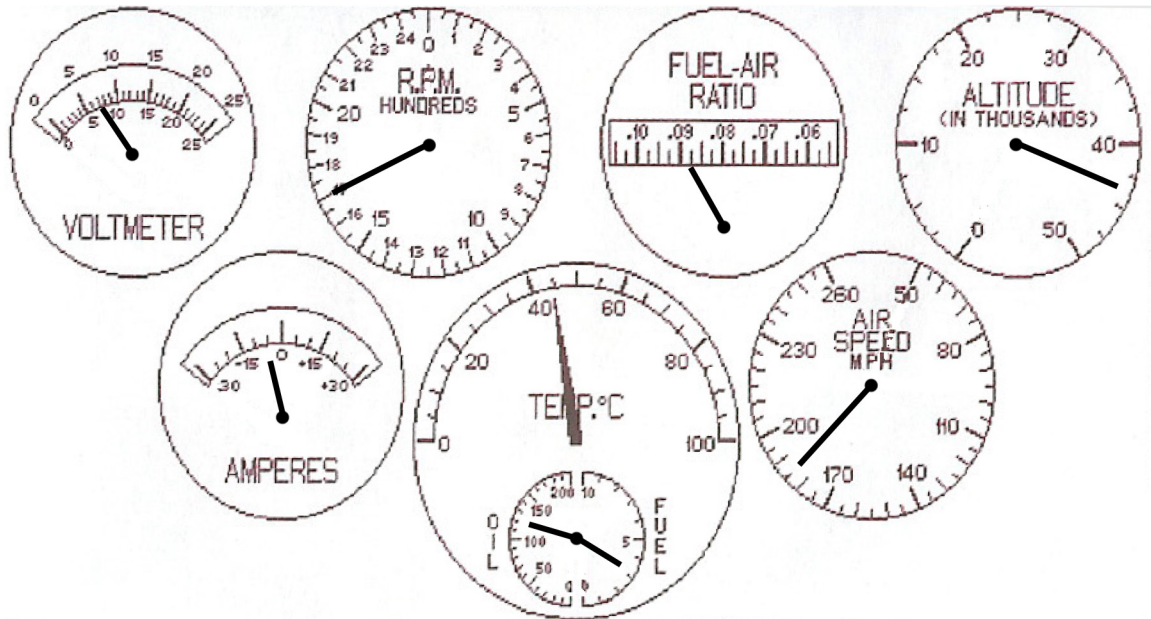
26 minutes

There are 25 questions in the Dials section. You are given 26 minutes to complete the section. Each question will display a picture of several aircraft dials, such as an altimeter, voltmeter, vertical speed indicator (VSI), airspeed indicator, or fuel ratio. While all are based on actual aircraft instruments, prior familiarity is unimportant as they are easy to understand.

As opposed to this practice test, where each picture has a group of questions, the AT-SAT will only have one question per picture. The dials pictured here differ from some of those pictured on the AT-SAT, but the concept is the same.

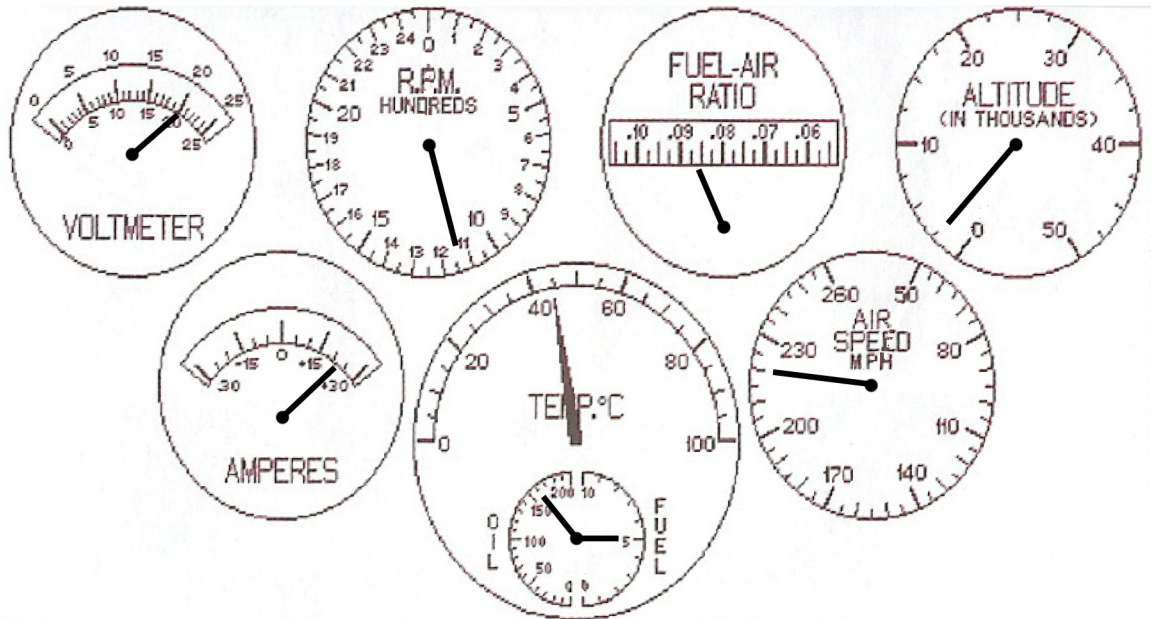
The precise reading on a dial may be difficult to determine due to resolution or scale (a reading of 17.5 as opposed to 18, for example). In these cases, determine which answer is the closest to what the reading appears to be.

Dials - Questions 1-6



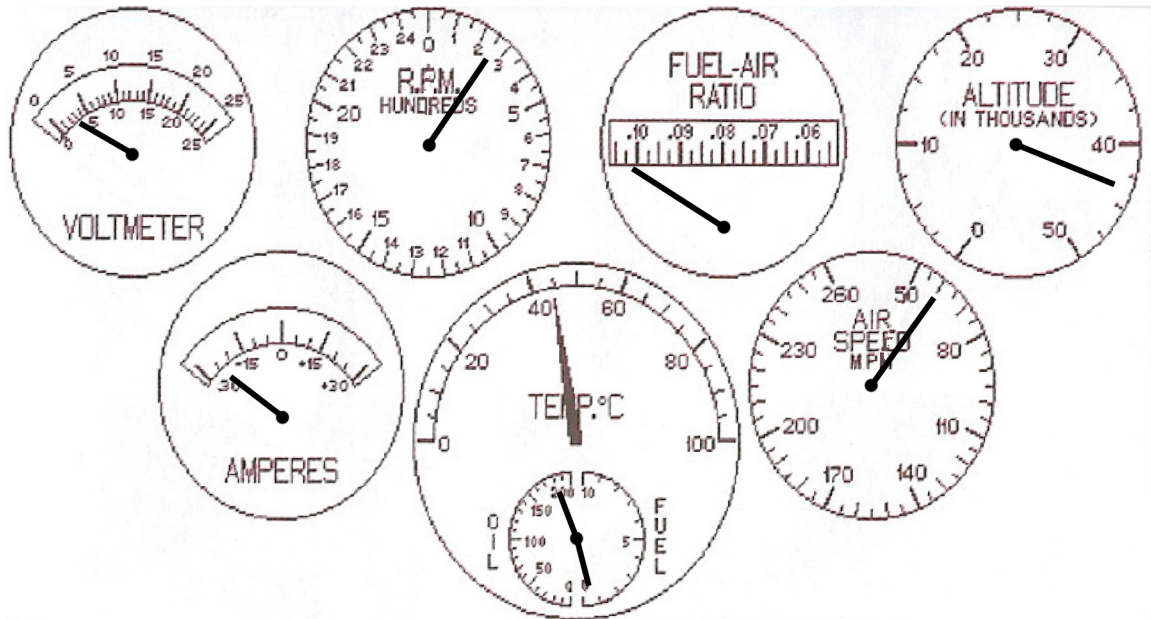
1. What Fuel-Air Ratio is indicated?
A. 0.09 B. 0.088 C. 0.88 D. 0.092
2. What is the Ampere reading?
A. -10 B. -2 C. 5 D. -5
3. What is the current altitude?
A. 43,000 B. 4,300 C. 43 D. 4.3
4. How much fuel is remaining?
A. 3.2 B. 4 C. 6.8 D. 2
5. How many volts are indicated?
A. 5 B. -8 C. 7 D. -7
6. What is the current airspeed?
A. 175 B. 185 C. 215 D. 18.5

Dials - Questions 7-12



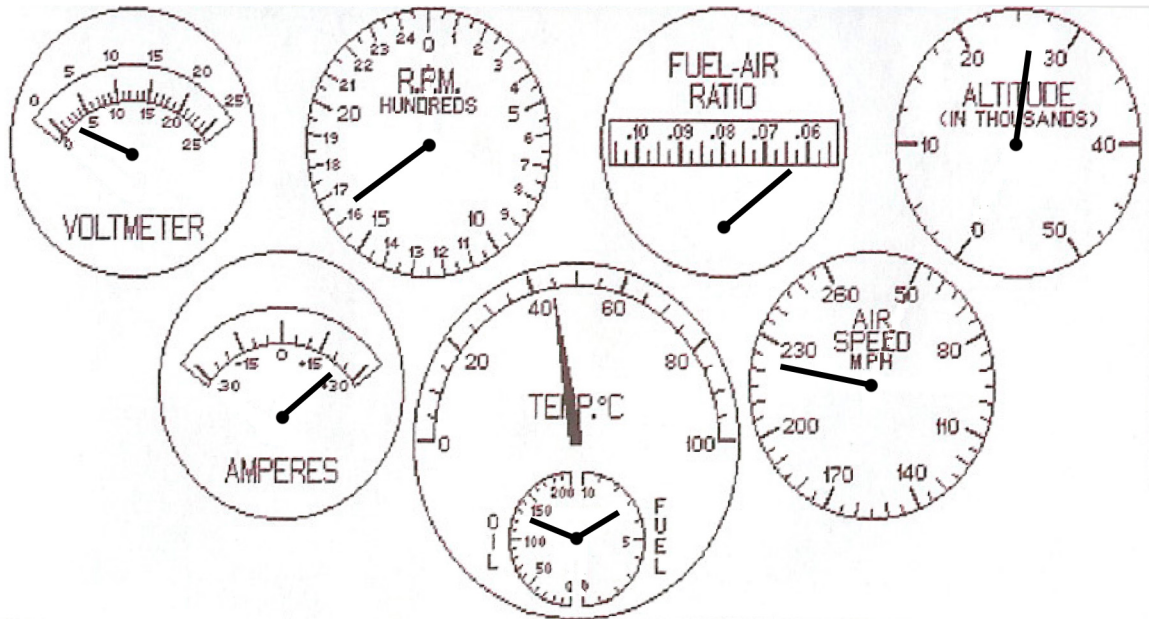
7. What is the current altitude?
A. 250 B. 25 C. 2500 D. 25,000
8. How much oil is indicated?
A. 160 B. 2.6 C. 26 D. 16
9. What is the engine RPM reading?
A. 11 B. 12.5 C. 11.03 D. 1130
10. What airspeed is indicated?
A. 220 kts B. 215 kts C. 215 mph D. 220 mph
11. The Fuel-Air Ratio is displayed as:
A. -0.086 B. 0.086 C. 0.860 D. 0.0086
12. What is the indicated fuel level?
A. 160 B. 0.5 C. 50 D. 5

Dials - Questions 13-18



13. 60 is the indicated value on which dial?
A. RPM B. Oil C. Airspeed indicator D. Altimeter
14. What is the current Fuel-Air Ratio?
A. 0.12 B. 0.012 C. 1.2 D. 1.0
15. What is the current altitude?
A. 57,000 B. 47,000 C. 43,000 D. 5,700
16. The indicated ampere reading is:
A. -24 B. -37 C. 24 D. 37
17. Which dial is currently indicating a reading of 250?
A. Fuel B. RPM C. Airspeed indicator D. Thermometer
18. The voltmeter is indicating:
A. 2.5 B. 4 C. 5 D. -3

Dials - Questions 19-25



19. The current altitude is:
A. 2,300 B. 25,000 C. 2,600 D. 26,000
20. What is the indicated airspeed?
A. 215 B. 222 C. 235 D. 218
21. A reading of 125 is current displayed on the:
A. Oil B. RPM C. Voltmeter D. Ammeter
22. Which of the following readings could not be indicated on the altimeter?
A. 5,500 B. 500 C. 55,000 D. 31,000
23. The current RPM reading is:
A. 16.4 B. 0.164 C. 164 D. 1640
24. What is the current ampere reading?
A. 22.5 B. 19 C. -18 D. 17.5
25. The Fuel-Air Ratio is indicating:
A. 0.060 B. 0.064 C. 0.0064 D. 0.64

Applied Math

30 questions

30 minutes

There are 25 questions in the Applied Math section. You are given 25 minutes to complete the section. Questions in Applied Math will ask to determine things such as distance traveled or changes in altitude. The only equation necessary to answer these questions is $D = ST$, that is, Distance equals Speed multiplied by Time. No conversions are necessary; all problems are given in knots and nautical miles.

Be aware of the difference between true airspeed and groundspeed, as it is relevant in a few questions. True airspeed is what a plane's airspeed indicator will display. Groundspeed is the plane's actual speed over the ground, and is calculated by combining true airspeed along with the effect of a headwind or tailwind. For example, a plane with a true airspeed of 225 knots flying into a headwind of 25 knots will have a groundspeed of 200 knots. If a question does not specify what type of speed is being asked for, always use groundspeed. Remember to add tailwinds and subtract headwinds.

Finally, kts = knots (nm per hour), nm = nautical miles.

Applied Math - Questions 1-20

1. A jet at 2000 ft is climbing at 500 ft/min. After 12 minutes, what is its altitude?
A. 10,000 ft B. 5,000 ft C. 8,000 ft D. 6,000 ft
2. What is a plane's speed if it has traveled 450 miles in 90 minutes?
A. 250 kts B. 100 kts C. 500 kts D. 300 kts
3. An aircraft has flown 375 miles in 90 minutes. What is the aircraft's groundspeed?
A. 150 kts B. 200 kts C. 250 kts D. 300 kts
4. An airplane begins a descent from 20,000 ft at 1500 ft/min. After 5 minutes it slows to 500 ft/min. How much longer will it take to reach 5000 ft?
A. 20 mins B. 10 mins C. 15 mins D. 17 mins
5. An airplane is flying at an airspeed of 210 kts and is encountering a headwind of 30 kts. How far will it travel in 75 minutes?
A. 225 nm B. 250 nm C. 175 nm D. 200 nm
6. How long will it take an airplane to travel 675 miles if it is flying at 175 kts with a 50 kt tailwind?
A. 3 hours B. 3.5 hours C. 2 hours and 15 minutes D. 2.5 hours
7. How far will an airplane travel if it is flying at 225 kts with a 25 kt headwind for four and a half hours?
A. 750 nm B. 975 nm C. 825 nm D. 900 nm
8. How long will it take an airplane to descend from 30,000 ft to 10,000 ft if it descends at 1,000 ft/min until reaching 20,000 ft and then continues at 500 ft/min?
A. 20 mins B. 25 mins C. 30 mins D. 35 mins
9. The airplane in question 8 has a groundspeed of 220 kts. How far will it travel during the descent from 30,000 ft to 10,000 ft?
A. 200 nm B. 175 nm C. 130 nm D. 110 nm
10. An airplane is traveling at 200 kts. How far will it go in 75 minutes?
A. 205 nm B. 250 nm C. 225 nm D. 230 nm
11. An airplane has a groundspeed of 400 kts. How far will it travel in 1 hour and 45 mins?
A. 975 nm B. 650 nm C. 800 nm D. 700 nm
12. An airplane is flying at 115 kts and has a headwind of 15 kts. How far will it travel in 45 minutes?
A. 75 nm B. 85 nm C. 95 nm D. 100 nm
13. After takeoff an airplane climbs at 2500 ft/min. How long will it take to reach 37,500 ft?
A. 10 mins B. 12 mins C. 14 mins D. 15 mins

14. The airplane in question 13 has a groundspeed of 300 kts. How far will it travel during its climb?
A. 100 nm B. 75 nm C. 125 nm D. 115 nm
15. How long will it take an airplane traveling at 225 kts to go 675 nm?
A. 2 hours B. 2.5 hours C. 3 hours D. 3.5 hours
16. An airplane with a ground speed of 250 kts is flying with into a headwind. If it has traveled 330 nm after 90 minutes, how fast is the headwind?
A. 0 kts B. 30 kts C. 80 kts D. 45 kts
17. What is the descent rate of a plane that has descended from 25,000 ft to 17,500 ft in 15 minutes?
A. 500 ft/min B. 650 ft/min C. 250 ft/min D. 550 ft/min
18. A plane travels at 250 kts for 30 minutes. It then increases its speed to 300 knots for 45 minutes. How far has the plane traveled?
A. 325 nm B. 300 nm C. 400 nm D. 350 nm
19. A plane's airspeed indicator reads 225 kts. After 90 minutes, it has traveled 360 nm. What is the wind velocity?
A. 15 kt headwind B. 15 kt tailwind C. 25 kt headwind D. None
20. After taking off, a plane takes 5 minutes to climb to 5,000 feet. It then climbs at 750 ft/min to 12,500 feet. How much time has elapsed since the plane took off?
A. 10 min B. 20 min C. 12 min D. 15 min
21. A plane takes 3 hours and 15 minutes to fly from Airport A to Airport B, traveling at 350 kts. How far apart are Airport A and Airport B?
A. 1103 nm B. 1150 nm C. 1138 nm D. 1128 nm
22. If a plane is traveling at 275 kts with a 25 kt tail wind, how many minutes will it take to travel 600 nm?
A. 120 min B. 144 min C. 131 min D. 109 min
23. How many minutes will a plane have to maintain a speed of 250 kts to travel 400 nm?
A. 38 min B. 96 min C. 66 min D. 120 min
24. A plane begins a descent at 1,500 ft/min, taking 15 minutes to land. What was its beginning altitude?
A. 22,500 ft B. 37,500 ft C. 10,000 ft D. 15,500 ft
25. A plane departs to the east from Airport A, traveling 330 kts. At the same time another plane departs to the west from Airport A, traveling 220 kts. How many nm apart are the planes after 40 minutes?
A. 44 nm B. 74 nm C. 220 nm D. 367 nm

26. A plane takes off and begins to climb at 2,500 ft/min, traveling at 240 kts. How many nm has the plane traveled from the airport when it reaches 30,000 ft?
A. 48 nm B. 12 nm C. 20 nm D. 34 nm
27. What is the average groundspeed of an aircraft that travels 500 miles in 2.5 hours with a 20 kt headwind?
A. 180 kts B. 200 kts C. 220 kts D. 208 kts
28. At 12:00, a plane is 200 nm from Airport A. At what speed is the plane traveling if it flies over Airport A at 12:40?
A. 200 kts B. 250 kts C. 300 kts D. 400 kts
29. It takes an aircraft 40 minutes to fly round trip from Airport A to Airport B. The airports are 120 nm apart. How fast is the aircraft traveling?
A. 120 kts B. 240 kts C. 180 kts D. 360 kts
30. How many miles has a plane traveled if it flies at 350 kts with a 25 kts headwind for 1.5 hours?
A. 525 nm B. 563 nm C. 500 nm D. 488 nm

Angles

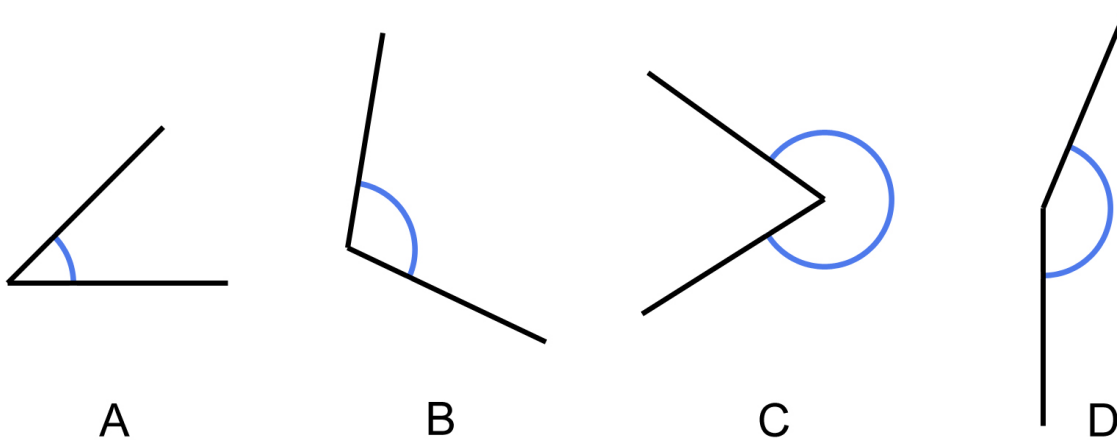
18 questions

6 minutes

There are 30 Angles questions on the AT-SAT, with 10 minutes allotted to complete the section. Despite the short amount of time given, Angles is not particularly difficult. The questions will be of two types. In the first, a picture of an angle is given with four options of the number of degrees that the angle represents. In the second, four pictures are given along with a given number of degrees, and the testee must select the correct picture.

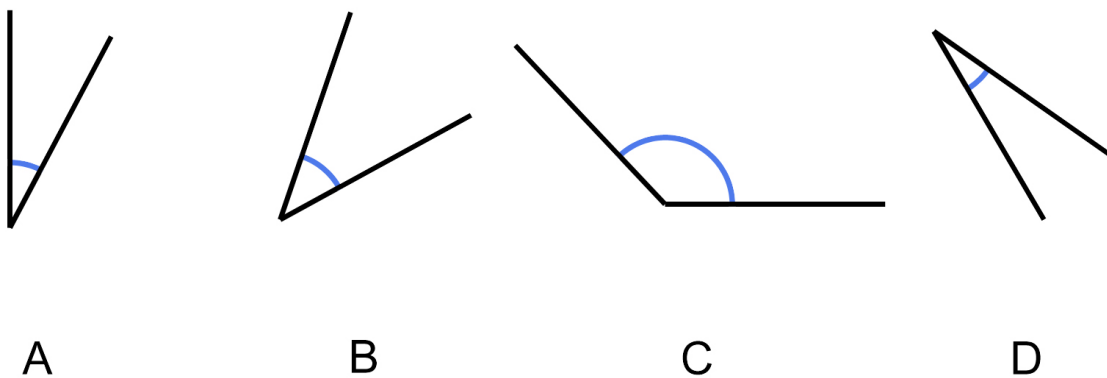
The AT-SAT will not attempt to “trick” testees with overbearing similarity (asking to select between 55 and 60 degrees, for example). If an question seems to have two or more similar answer, consider the pictures carefully - do not overlook the arc indicating that an angle is 90 degrees as opposed to 270 degrees, for example. It may also help to count from “known” angles; that is, right angles are always 90 degrees, half of a right angle is 45 degrees, and a third of a right angle is 30 degrees. Selecting one of the lines of an angle in question as the base of a right angle may help in this visualization technique.

Angles - Questions 1-4



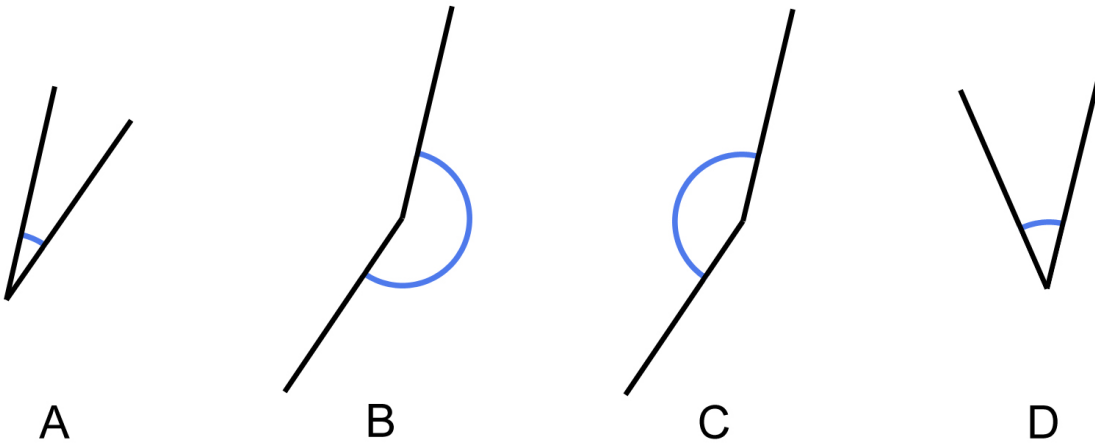
1. Which angle is depicted in picture A?
A. 80 degrees B. 45 degrees C. 20 degrees D. 15 degrees
2. Which angle is depicted in picture B?
A. 175 degrees B. 140 degrees C. 90 degrees D. 110 degrees
3. Which angle is depicted in picture C?
A. 290 degrees B. 270 degrees C. 250 degrees D. 60 degrees
4. Which angle is depicted in picture D?
A. 160 degrees B. 45 degrees C. 180 degrees D. 200 degrees

Angles - Question 5



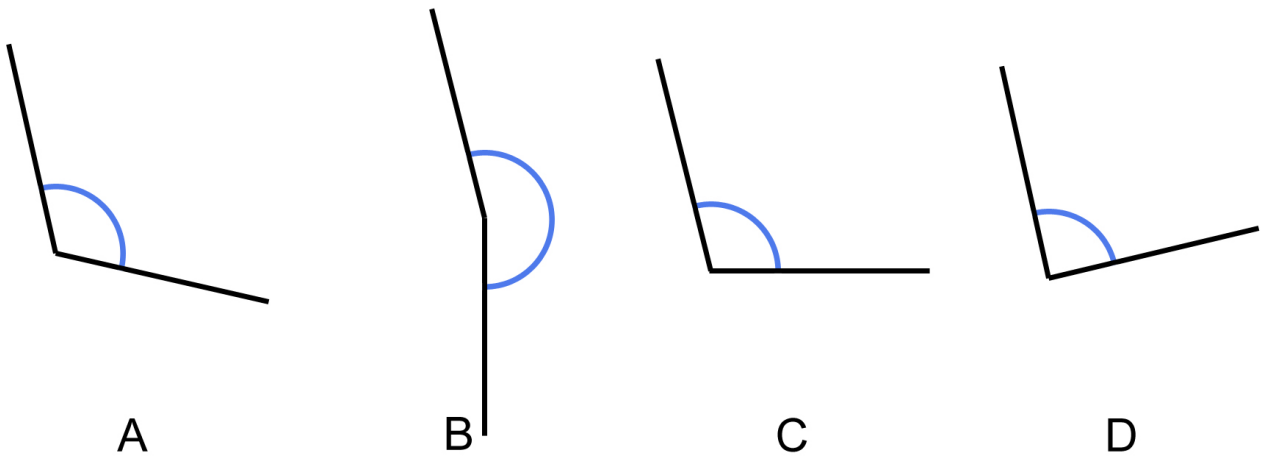
5. Which of the above pictures depicts a 45 degree angle?

Angles - Question 6



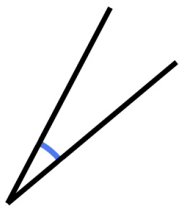
6. Which of the above pictures depicts a 200 degree angle?

Angles - Question 7

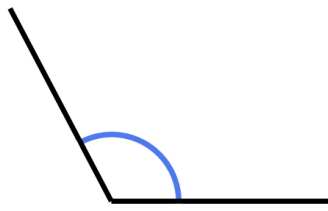


7. Which of the above pictures depicts a 100 degree angle?

Angles - Questions 8-11



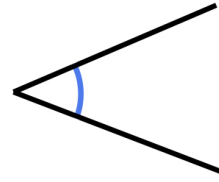
A



B



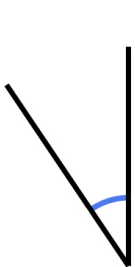
C



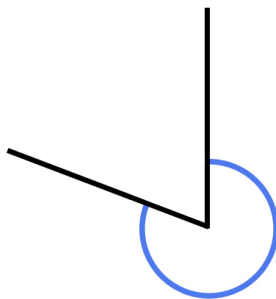
D

8. Which angle is depicted in picture A?
A. 45 degrees B. 60 degrees C. 5 degrees D. 20 degrees
9. Which angle is depicted in picture B?
A. 135 degrees B. 120 degrees C. 150 degrees D. 210 degrees
10. Which angle is depicted in picture C?
A. 180 degrees B. 360 degrees C. 0 degrees D. 100 degrees
11. Which angle is depicted in picture D?
A. 70 degrees B. 20 degrees C. 45 degrees D. 80 degrees

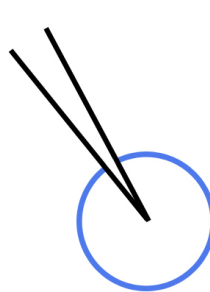
Angles - Question 12



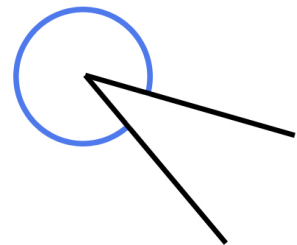
A



B



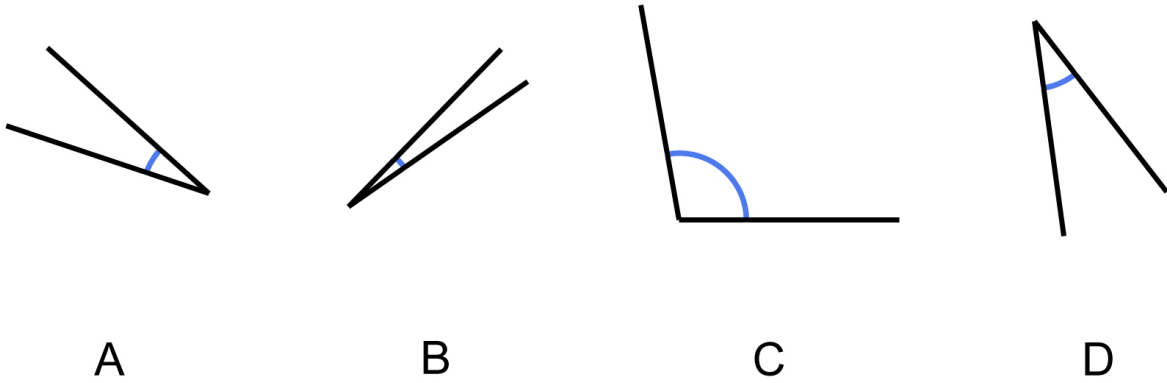
C



D

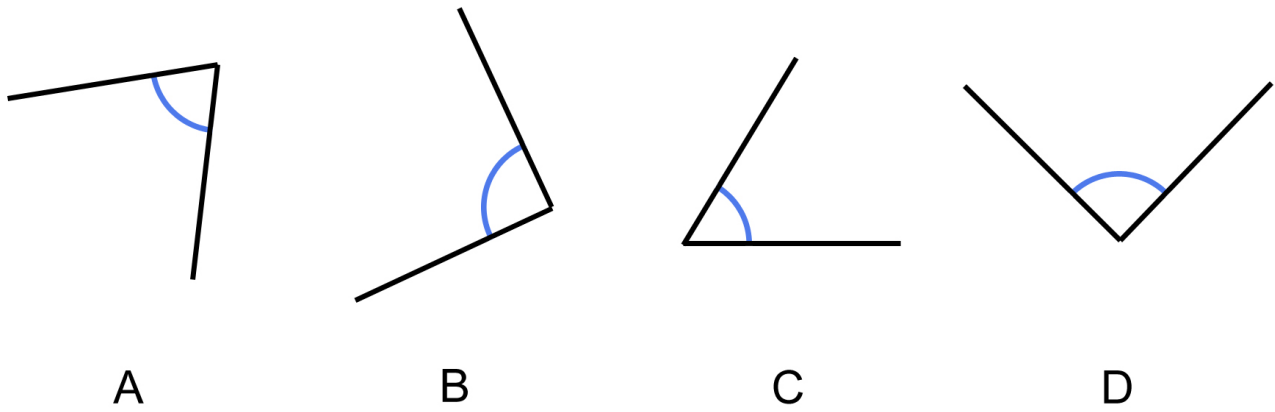
12. Which of the above pictures depicts a 330 degree angle?

Angles - Question 13



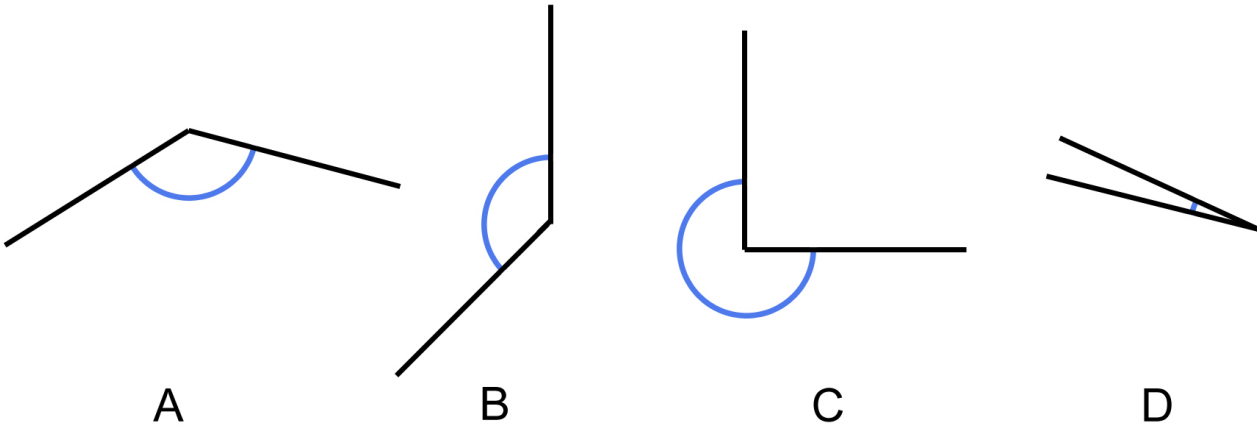
13. Which of the above pictures depicts a 10 degree angle?

Angles - Question 14



14. Which of the above pictures depicts an 80 degree angle?

Angles - Question 15-18



15. Which angle is depicted in picture A?

A. 130 degrees B. 160 degrees C. 100 degrees D. 30 degrees

16. Which angle is depicted in picture B?

A. 45 degrees B. 225 degrees C. 135 degrees D. 100 degrees

17. Which angle is depicted in picture C?

A. 90 degrees B. 270 degrees C. 75 degrees D. 25 degrees

18. Which angle is depicted in picture D?

A. 15 degrees B. 30 degrees C. 45 degrees D. 60 degrees

Answer Key - Dials

1. B
2. D
3. A
4. A
5. C
6. B
7. C
8. A
9. D
10. D
11. B
12. D
13. C
14. A
15. C
16. A
17. B
18. A
19. D
20. B
21. A
22. C
23. D
24. A
25. B

Answer Key - Applied Math

1. C
2. D
3. C
4. C
5. A
6. A
7. D
8. C
9. D
10. B
11. D
12. A
13. D
14. B
15. C
16. B
17. A
18. D
19. B
20. D
21. C
22. A
23. B
24. A
25. D
26. A
27. B
28. C
29. D
30. D

Answer Key - Angles

1. B
2. D
3. A
4. A
5. B
6. B
7. C
8. D
9. B
10. A
11. C
12. D
13. B
14. A
15. A
16. C
17. B
18. A