

ASVAB Test Study Guide

CURRENT DIGITAL EDITION

A focused review of the current CAT-ASVAB, paper-and-pencil ASVAB, and PiCAT formats, all 10 subtests, test-day strategy, and 110 original practice questions with complete explanations.

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How to Use This Guide

This guide is designed to help you review the knowledge and reasoning skills measured by the Armed Services Vocational Aptitude Battery (ASVAB). It is not an official publication of the Department of Defense, and it does not reproduce secure test questions. The lessons and practice items are original preparation material.

Start with a baseline

Take a short mixed practice set before studying. Record which questions you miss and why. A wrong answer caused by weak content knowledge requires a different fix from a wrong answer caused by rushing or misreading.

A practical study sequence

1. Learn the current test format and identify whether you are preparing for the CAT-ASVAB, the paper-and-pencil test, or PiCAT.
2. Prioritize the four AFQT subtests: Arithmetic Reasoning, Mathematics Knowledge, Word Knowledge, and Paragraph Comprehension.
3. Review the remaining technical and spatial subtests that may affect military job qualification.
4. Complete the practice questions without a calculator. Review every explanation, including questions answered correctly by guessing.
5. Repeat mixed practice under timed conditions and track accuracy by subtest.

What this guide does not promise

No study guide can guarantee enlistment eligibility, a particular AFQT percentile, or qualification for a specific military occupation. Each service applies its own current eligibility and classification rules. Confirm branch-specific requirements with an authorized recruiter.

START WITH EVIDENCE

Take a Free ASVAB Practice Test

Use a baseline to identify the subtests costing you the most points before choosing what to study.

[Start Free Practice](#)[View ASVAB Overview](#)

EXAM FORMAT

ASVAB Overview

The Armed Services Vocational Aptitude Battery is a multiple-aptitude battery used to help determine military enlistment eligibility and identify occupational areas that may fit an applicant's abilities. The ASVAB is also used in the Career Exploration Program for many high school and post-secondary students.

The 10 subtests

Subtest	Code	What it measures	Domain
General Science	GS	Physical and biological sciences	Science/Technical
Arithmetic Reasoning	AR	Arithmetic word problems	Math
Word Knowledge	WK	Vocabulary and word meaning	Verbal
Paragraph Comprehension	PC	Information from written passages	Verbal
Mathematics Knowledge	MK	High school mathematics	Math
Electronics Information	EI	Electricity and electronics	Science/Technical
Auto Information	AI	Automobile technology	Science/Technical
Shop Information	SI	Tools and shop practices	Science/Technical
Mechanical Comprehension	MC	Mechanical and physical principles	Science/Technical
Assembling Objects	AO	Spatial assembly of parts	Spatial

Important

Auto Information and Shop Information are separate subtests on the CAT-ASVAB. On the paper-and-pencil version, they are combined into a single Auto & Shop Information subtest.

EXAM FORMAT

CAT-ASVAB and P&P-ASVAB

CAT-ASVAB

The computerized ASVAB is adaptive. The computer selects later questions partly on the basis of earlier responses. Once you submit an answer, you cannot return to that question. Each subtest has a time limit, but test takers move from one subtest to the next at their own pace.

Subtest	Scored questions	Time limit (min.)
GS	15	12
AR	15	55
WK	15	9
PC	10	27
MK	15	31
EI	15	10
AI	10	7
SI	10	6
MC	15	22
AO	15	18
Total	135	197

Some CAT-ASVAB administrations include unscored tryout questions. When tryout questions are included, a subtest can contain more items and have a longer time limit than the scored-question table above.

EXAM FORMAT

Paper-and-pencil ASVAB

The paper-and-pencil version is administered at only a limited number of locations. Test takers may review answers within the current subtest, but they cannot return to an earlier subtest after time is called.

Subtest	Questions	Time limit (min.)
GS	25	11
AR	30	36
WK	35	11
PC	15	13
MK	25	24
EI	20	9
AS	25	11
MC	25	19
AO	25	15
Total	225	149

PiCAT, Scores, and Retesting

PiCAT

PiCAT is an unproctored version of the computerized ASVAB. A recruiter provides access. The test must be completed within the required window, and eligible applicants generally take a shorter proctored verification test afterward. A successful verification allows the PiCAT results to become the official ASVAB score of record.

AFQT score

The Armed Forces Qualification Test (AFQT) score is calculated from Arithmetic Reasoning, Mathematics Knowledge, Paragraph Comprehension, and Word Knowledge. AFQT scores are percentiles from 1 to 99. A score of 60 means the test taker performed as well as or better than 60 percent of the national reference group; it does not mean 60 percent of questions were answered correctly.

AFQT category	Percentile range
I	93-99
II	65-92
IIIA	50-64
IIIB	31-49
IVA	21-30
IVB	16-20

AFQT category	Percentile range
IVC	10-15
V	1-9

Retest policy

After an initial ASVAB, an applicant generally must wait one calendar month before the first retest and another calendar month before the second retest. Additional retests generally require a six-calendar-month wait. Special confirmation or invalidation rules may also apply. Follow the instructions provided by the recruiter or testing program.

EXAM FORMAT

Test-Day Strategy

For every version

- Read the directions and the entire question before selecting an answer.
- Work without a calculator during preparation; calculators are not allowed on the ASVAB.
- Use elimination when you do not know the answer immediately.
- Watch the clock, but do not let one difficult question consume time needed for later questions.
- Keep scratch work organized so that arithmetic and unit errors are easier to catch.

CAT-ASVAB strategy

- Confirm your choice before submitting because you cannot return to an earlier question.
- Do not respond with a string of random guesses at the end of a subtest. Continue making legitimate attempts.
- Do not try to infer your score from question difficulty. Adaptive testing is designed to give questions near your estimated ability level.

Paper-and-pencil strategy

- Skip a difficult item and return to it within the same subtest if time remains.
- Answer every item. There is no penalty for guessing on the paper-and-pencil version.
- Check that each answer is marked on the correct line of the answer sheet.

No-calculator arithmetic habits

1. Estimate first so you know the approximate size of the answer.
2. Write intermediate steps instead of trying to hold every number in memory.
3. Reduce fractions before multiplying when possible.
4. Label units and convert them before combining quantities.
5. Check the result against the question, not just against your calculation.

SUBTEST REVIEW

General Science (GS)

General Science measures broad knowledge of life science, earth and space science, physical science, and basic scientific reasoning. The strongest preparation is conceptual: know what a principle means and how it applies, not merely a list of isolated terms.

Life science essentials

- Cells are the basic units of living organisms. The cell membrane regulates movement into and out of the cell; the nucleus contains genetic material in eukaryotic cells; mitochondria release usable energy from nutrients.
- Photosynthesis stores energy in glucose, while cellular respiration releases energy from glucose. Plants perform both processes.
- Genes are segments of DNA. Alleles are alternative forms of a gene. Dominant and recessive describe inheritance patterns, not whether a trait is common or desirable.
- In ecosystems, producers capture energy, consumers obtain energy from other organisms, and decomposers recycle matter. Energy decreases as it moves through trophic levels.

Earth, space, and physical science

- The rock cycle links igneous, sedimentary, and metamorphic rock. Weathering breaks material down; erosion transports it.
- Earth rotates once per day and revolves around the Sun once per year. Seasons result primarily from Earth's axial tilt, not changing distance from the Sun.
- Matter is made of atoms. Protons are positive, neutrons are neutral, and electrons are negative. Atomic number equals the number of protons.
- Physical changes alter form or state without creating a new substance. Chemical changes produce substances with different compositions.

Scientific reasoning

- An independent variable is deliberately changed; a dependent variable is measured. A control group provides a comparison.
- A hypothesis is a testable proposed explanation. A theory is a broad explanation supported by extensive evidence; it is not merely a guess.
- Reliable conclusions depend on controlled procedures, repeatable measurements, and data that actually address the question.

SUBTEST REVIEW

General Science Practice Questions

- 1.** Which organelle is most directly associated with releasing usable energy from food? _____
 - A. Nucleus
 - B. Mitochondrion
 - C. Cell wall
 - D. Ribosome

- 2.** Which process moves weathered rock or soil from one location to another?
 - A. Erosion
 - B. Condensation
 - C. Metamorphism
 - D. Crystallization

- 3.** An atom has 8 protons. What is its atomic number?
 - A. 4
 - B. 8
 - C. 16
 - D. Cannot be determined

- 4.** Which statement best explains Earth's seasons?
 - A. Earth is much closer to the Sun in summer
 - B. Cloud cover changes Earth's orbit
 - C. Earth's axis is tilted as Earth revolves around the Sun
 - D. The Sun produces more energy during part of the year

- 5.** In an experiment, the amount of fertilizer is changed and plant height is measured. What is the dependent variable?
 - A. Amount of fertilizer
 - B. Plant height
 - C. Type of pot
 - D. Number of seeds

- 6.** Which organism is a producer?
 - A. Mushroom
 - B. Hawk
 - C. Grass
 - D. Earthworm

SUBTEST REVIEW

General Science Answer Explanations

1. **B** Mitochondria perform much of cellular respiration and generate ATP, the cell's usable energy carrier.
2. **A** Weathering breaks material apart; erosion transports the material.
3. **B** Atomic number is defined by the number of protons in the nucleus.
4. **C** Axial tilt changes the angle and duration of sunlight received by each hemisphere during the year.
5. **B** The dependent variable is the measured outcome: plant height.
6. **C** Grass captures light energy through photosynthesis and forms the base of many food chains.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Arithmetic Reasoning (AR)

Arithmetic Reasoning measures the ability to translate word problems into mathematical operations. The main challenge is not advanced mathematics; it is identifying what the question asks, selecting the relevant facts, and keeping units consistent.

Build the equation before calculating

- Underline the quantity requested. Then identify the given values and the relationship connecting them.
- Translate common language: total often signals addition, difference signals subtraction, of often signals multiplication, and per signals a rate or division.
- Ignore information that does not affect the requested quantity. Extra facts are common in word problems.

Fractions, ratios, and proportions

- To add or subtract fractions, use a common denominator. To multiply fractions, multiply numerators and denominators, then reduce.
- A ratio compares quantities in a stated order. A proportion sets two ratios equal. Cross multiplication is useful only after the quantities are aligned correctly.
- Unit rates describe one unit of a quantity, such as dollars per pound or miles per hour.

Percents and averages

- Percent means per hundred. Convert a percent to a decimal by dividing by 100.
- Percent change compares the change with the original value: change divided by original, multiplied by 100 percent.
- Average equals sum divided by count. A weighted average must account for how many observations carry each value.

SUBTEST REVIEW

Rates, work, and distance

- Distance equals rate times time. Convert minutes to hours before using miles per hour.
- For constant work rates, add the amount of work completed per unit time. If one worker completes a job in 6 hours, the rate is $\frac{1}{6}$ job per hour.
- Estimation is a powerful check. An answer that violates the expected direction or scale is likely wrong.

Arithmetic Reasoning Practice Questions

7. A jacket originally costs \$80 and is discounted 25 percent. What is the sale price?

- A. \$20
- B. \$55
- C. \$60
- D. \$65

8. A car travels 150 miles in 3 hours. What is its average speed?

- A. 45 mph
- B. 50 mph
- C. 75 mph
- D. 450 mph

9. A recipe uses 3 cups of flour for 24 cookies. How many cups are needed for 40 cookies at the same rate?

- A. 4
- B. 5
- C. 6
- D. 7.5

10. A tank is $\frac{3}{5}$ full. After 12 gallons are added, it is $\frac{9}{10}$ full. What is the tank's capacity?

- A. 30 gallons
- B. 36 gallons
- C. 40 gallons
- D. 48 gallons

11. Four test scores are 72, 81, 84, and 91. What score is needed on a fifth test for an average of 84?

- A. 88
- B. 90
- C. 92
- D. 94

12. One pump fills a pool in 8 hours. A second pump fills it in 12 hours. How much of the pool do they fill together in 1 hour?

- A. $1/20$
- B. $5/24$
- C. $1/4$
- D. $2/3$

Arithmetic Reasoning Answer Explanations

7. C Twenty-five percent of \$80 is \$20. Subtract the discount: $\$80 - \$20 = \$60$.

8. B Average speed is distance divided by time: $150 / 3 = 50$ mph.

9. B Set up $3/24 = x/40$. Then $x = 3(40)/24 = 5$ cups.

10. C The increase is $9/10 - 3/5 = 3/10$ of the tank. If $3/10$ is 12 gallons, the full capacity is $12 \times 10/3 = 40$ gallons.

11. C A five-test average of 84 requires 420 total points. The first four total 328, so $420 - 328 = 92$.

12. B Add rates: $1/8 + 1/12 = 3/24 + 2/24 = 5/24$ of the pool per hour.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Word Knowledge (WK)

Word Knowledge measures vocabulary through synonyms and words used in context. Exact dictionary memorization is less useful than understanding roots, prefixes, suffixes, connotation, and how a word functions in a sentence.

Use context precisely

- Read the entire sentence. Determine whether the target word describes a person, action, quality, degree, or relationship.
- Replace the target word with each choice. The best answer should preserve both the basic meaning and the sentence's tone.
- Beware of choices that are related to the topic but are not synonyms.

Use word parts

- Common prefixes include anti- (against), bene- (good), circum- (around), de- (down or away), inter- (between), and pre- (before).
- Common roots include cred (believe), dict (say), port (carry), scrib/script (write), and vid/vis (see).
- Suffixes can reveal word type: -ous often forms an adjective, -tion often forms a noun, and -ize often forms a verb.

SUBTEST REVIEW

Control degree and connotation

- Words can share a general direction but differ in intensity. Annoyed is weaker than enraged; pleased is weaker than ecstatic.
- Positive and negative connotations matter. Thrifty and stingy both relate to saving money, but their tones differ.
- When two choices are close, choose the one that fits the sentence most naturally.

Word Knowledge Practice Questions

13. The word *concise* most nearly means

- A. confusing
- B. brief
- C. humorous
- D. forceful

14. The mechanic was *meticulous* when inspecting the engine. Meticulous most nearly means

- A. careless
- B. quick
- C. thorough
- D. uncertain

15. The word *reluctant* most nearly means

- A. unwilling
- B. eager
- C. angry
- D. capable

16. The storm caused a *substantial* amount of damage. Substantial most nearly means

- A. minor
- B. considerable
- C. unexpected
- D. temporary

17. The word *transparent* most nearly means

- A. able to be seen through
- B. extremely strong
- C. brightly colored
- D. difficult to move

- 18.** The supervisor tried to *mitigate* the conflict. Mitigate most nearly means
- A. intensify
 - B. ignore
 - C. reduce
 - D. describe

Word Knowledge Answer Explanations

- 13. B** Concise means brief and clearly expressed without unnecessary words.
- 14. C** Meticulous describes very careful attention to detail.
- 15. A** Reluctant means hesitant or unwilling.
- 16. B** Substantial means large or considerable in amount.
- 17. A** Transparent material permits light to pass through so objects can be seen through it.
- 18. C** To mitigate is to make something less severe or harmful.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Paragraph Comprehension (PC)

Paragraph Comprehension measures the ability to obtain information from written passages. Most questions focus on main idea, stated detail, inference, purpose, or the meaning of a word in context.

Main idea and purpose

- The main idea is the central point supported by the passage. It is broader than a single detail but narrower than the general topic.
- Purpose asks why the passage was written: to explain, compare, persuade, describe, warn, or provide instructions.
- Choose an answer supported by the whole passage, not merely by one familiar phrase.

Details and inference

- Detail questions should be answered from explicit statements. Return to the relevant sentence and verify the wording.
- An inference must follow logically from the text. It should not require outside information or a chain of assumptions.
- Extreme answers using words such as always, never, completely, or impossible are often wrong unless the passage clearly supports that degree.

SUBTEST REVIEW

Efficient reading

- Read short passages carefully rather than racing through them. Mark the subject, the author's point, and any contrast words such as however or although.
- Use the question to locate the necessary information, but do not answer from memory when the passage can be checked directly.
- Paraphrase the relevant sentence in simple language before comparing answer choices.

Paragraph Comprehension Practice Questions

19. Passage: Many desert plants have waxy leaf coatings and small leaves. These features reduce water loss in hot, dry environments. What is the main idea?

- A. Desert plants grow rapidly
- B. Some plant features conserve water
- C. All waxy plants live in deserts
- D. Small leaves absorb more sunlight

20. Passage: The town replaced several streetlights with LED fixtures. Electricity use declined, and the new bulbs required less frequent replacement. Which benefit is directly stated?

- A. The streets became wider
- B. Maintenance was needed less often
- C. Traffic declined
- D. The fixtures were cheaper to purchase

21. Passage: Jordan checked the weather forecast, packed a rain jacket, and moved the picnic supplies indoors. What can reasonably be inferred?

- A. Jordan expected rain
- B. Jordan canceled the picnic permanently
- C. Jordan dislikes outdoor events
- D. Jordan had already become wet

22. Passage: Before operating the drill press, secure loose clothing, tie back long hair, and wear eye protection. The author's primary purpose is to

- A. entertain
- B. compare tools
- C. give safety instructions
- D. describe the history of machinery

23. Passage: The committee considered three designs. Although the first was least expensive, it required frequent maintenance. The second cost more initially but was expected to last longer. Why might the committee prefer the second design?

- A. It was the cheapest to buy
- B. It may have lower long-term costs
- C. It required more maintenance
- D. It was the oldest design

24. Passage: The river was *turbid* after the storm because sediment had been stirred into the water. In this passage, turbid most nearly means

- A. clear
- B. muddy
- C. cold
- D. deep

Paragraph Comprehension Answer Explanations

19. B Both details explain adaptations that reduce water loss.

20. B The passage states that the bulbs required less frequent replacement.

21. A The actions are consistent with expecting rain; the other choices add unsupported claims.

22. C The passage provides direct safety procedures.

23. B The second design may offset a higher initial price through longer life and less maintenance.

24. B The context explains that sediment made the water cloudy or muddy.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Mathematics Knowledge (MK)

Mathematics Knowledge measures high school mathematics principles directly rather than through lengthy word problems. Topics include number properties, algebra, geometry, exponents, equations, functions, and basic probability.

Order of operations and number properties

- Use parentheses, exponents, multiplication and division from left to right, then addition and subtraction from left to right.
- A prime number has exactly two positive factors: 1 and itself. The number 1 is not prime.
- For signed numbers, equal signs produce a positive product or quotient; unlike signs produce a negative result.

BUILD THE FOUR AFQT SKILLS

Need more structured AFQT preparation?

The online course combines verbal and math lessons with targeted practice and progress tracking.

[Explore the Course](#)

SUBTEST REVIEW

Algebra

- Combine only like terms. Solve equations by performing the same operation on both sides.
- Distribute before combining terms: $a(b + c) = ab + ac$.
- For inequalities, reverse the inequality sign when multiplying or dividing both sides by a negative number.
- Slope is change in y divided by change in x . In $y = mx + b$, m is slope and b is the y -intercept.

Exponents and radicals

- When multiplying powers with the same base, add exponents. When dividing, subtract exponents.
- A nonzero number raised to the zero power equals 1.
- Square roots reverse squaring for nonnegative values. Simplify radicals by factoring out perfect squares.

Geometry

- Rectangle area = length $\times$ width. Triangle area = $\frac{1}{2} \times$ base $\times$ height. Circle area = $\pi \times r^2$.
- The angles in a triangle sum to 180 degrees. Complementary angles sum to 90 degrees; supplementary angles sum to 180 degrees.
- For a right triangle, $a^2 + b^2 = c^2$, where c is the hypotenuse.
- Volume measures three-dimensional space and is expressed in cubic units.

Mathematics Knowledge Practice Questions

25. Evaluate $6 + 3(8 - 4)^2$.

- A. 30
- B. 42
- C. 54
- D. 150

26. Solve $4x - 7 = 21$.

- A. $x = 3.5$
- B. $x = 7$
- C. $x = 14$
- D. $x = 28$

27. Simplify $3a + 5 - 2a + 7$.

- A. $a + 12$
- B. $5a + 12$
- C. $a + 2$
- D. $5a + 2$

28. What is the area of a triangle with base 12 and height 7?

- A. 19
- B. 42
- C. 84
- D. 168

29. A right triangle has legs of length 6 and 8. What is the hypotenuse?

- A. 10
- B. 12
- C. 14
- D. 48

30. Which expression equals $2^3 \times 2^4$?

- A. 2^7
- B. 4^7
- C. 2^{12}
- D. 4^{12}

Mathematics Knowledge Answer Explanations

25. C First compute $8 - 4 = 4$, then $4^2 = 16$, then $3(16) = 48$, and $6 + 48 = 54$.

26. B Add 7 to get $4x = 28$, then divide by 4: $x = 7$.

27. A Combine like terms: $3a - 2a = a$ and $5 + 7 = 12$.

28. B Area = $\frac{1}{2} \times 12 \times 7 = 42$ square units.

29. A $6^2 + 8^2 = 36 + 64 = 100$, so the hypotenuse is 10.

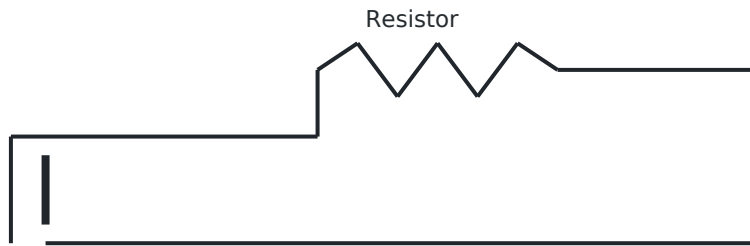
30. A When multiplying powers with the same base, add exponents: $3 + 4 = 7$.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Electronics Information (EI)

Electronics Information measures knowledge of electricity, circuits, electronic components, and related principles. Focus on relationships among voltage, current, resistance, power, and circuit arrangement.



Simple closed circuit

Concept illustration

Electrical quantities

- Voltage is electrical potential difference, current is the flow of electric charge, and resistance opposes current.
- Ohm's law is $V = I \times R$. Rearranged forms are $I = V/R$ and $R = V/I$.
- Electrical power is $P = V \times I$. Power is measured in watts, current in amperes, voltage in volts, and resistance in ohms.

Series and parallel circuits

- In a series circuit, current is the same through each component and total resistance is the sum of individual resistances.
- In a parallel circuit, voltage is the same across each branch. Adding branches reduces equivalent resistance and increases total current for a fixed voltage.
- An open circuit has a broken path and no continuous current. A short circuit provides an unintended low-resistance path and can produce excessive current.

Components and safety

- Resistors limit current, capacitors store electric charge, diodes primarily allow current in one direction, and transistors can switch or amplify signals.
- Fuses and circuit breakers protect wiring by interrupting excessive current.
- De-energize equipment before servicing when procedures require it. Never assume a circuit is safe merely because a switch is off.

SUBTEST REVIEW

Electronics Information Practice Questions

31. A 12-volt source is connected across a 4-ohm resistor. What current flows?

- A. 2 A
- B. 3 A
- C. 4 A
- D. 48 A

32. Which component is designed primarily to store electric charge?

- A. Capacitor
- B. Fuse
- C. Diode
- D. Transformer

33. In a simple series circuit, which quantity is the same through every component?

- A. Resistance
- B. Current
- C. Voltage drop
- D. Power rating

34. What is the purpose of a fuse?

- A. Increase voltage
- B. Store energy
- C. Interrupt excessive current
- D. Convert AC to DC

35. A circuit has voltage but no current because the conducting path is broken. This condition is called a(n)

- A. short circuit
- B. open circuit
- C. parallel circuit
- D. grounded circuit

36. A device uses 120 volts and draws 2 amperes. How much power does it use?

- A. 60 W
- B. 118 W
- C. 122 W
- D. 240 W

SUBTEST REVIEW

Electronics Information Answer Explanations

31. B $I = V/R = 12/4 = 3$ amperes.

32. A A capacitor stores charge in an electric field.

33. B A single path means the same current flows through all series components.

34. C A fuse opens the circuit when current exceeds a safe value.

35. B A break in the path creates an open circuit.

36. D $P = V \times I = 120 \times 2 = 240$ watts.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Auto Information (AI)

Auto Information covers basic automobile systems, maintenance, and operating principles. Questions generally test familiar components and how major systems work together rather than advanced repair procedures.

Engine and fuel basics

- In a four-stroke gasoline engine, the cycle is intake, compression, power, and exhaust.
- The air-fuel mixture enters the cylinder, is compressed, ignited, and then expelled after producing mechanical work.
- Engine oil reduces friction and carries heat and contaminants away from moving parts.

Cooling, electrical, and starting systems

- Coolant absorbs engine heat and carries it to the radiator, where heat is released to the air.
- The battery supplies electrical energy for starting and low-engine-speed demands. The alternator generates electrical power while the engine runs and helps recharge the battery.
- The starter motor turns the engine crankshaft during starting.

Brakes, tires, and drivetrain

- Hydraulic brakes transmit force through brake fluid. Worn pads or shoes reduce braking effectiveness.
- Tire pressure affects handling, wear, and fuel economy. Pressure should be checked against the vehicle manufacturer's specification.
- The transmission adjusts the relationship between engine speed and wheel speed; the differential allows drive wheels to rotate at different speeds while turning.

SUBTEST REVIEW

Auto Information Practice Questions

37. Which engine stroke normally produces useful power?

- A. Intake
- B. Compression
- C. Power
- D. Exhaust

38. What is the primary function of engine oil?

- A. Increase tire pressure
- B. Reduce friction between moving parts
- C. Cool the passenger compartment
- D. Ignite the fuel mixture

39. Which component normally recharges the battery while the engine is running?

- A. Alternator
- B. Radiator
- C. Starter
- D. Differential

40. Why is a differential needed?

- A. To cool engine oil
- B. To allow drive wheels to turn at different speeds
- C. To raise fuel pressure
- D. To engage the starter

41. Brake fluid is used primarily to

- A. transmit hydraulic pressure
- B. lubricate wheel bearings
- C. clean brake surfaces
- D. cool the radiator

42. Underinflated tires most directly increase

- A. rolling resistance
- B. battery voltage
- C. coolant pressure
- D. spark intensity

SUBTEST REVIEW

Auto Information Answer Explanations

- 37. C** Combustion forces the piston downward during the power stroke.
- 38. B** Engine oil lubricates moving parts and also helps carry heat and contaminants.
- 39. A** The alternator supplies electrical power and charges the battery during engine operation.
- 40. B** During a turn, the outer wheel travels farther and must rotate faster than the inner wheel.
- 41. A** Hydraulic pressure in brake fluid transfers pedal force to the brakes.
- 42. A** Low tire pressure increases deformation and rolling resistance, often worsening fuel economy and wear.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Shop Information (SI)

Shop Information measures knowledge of hand tools, power tools, materials, fasteners, measurement, and safe work practices. Correct tool selection and safety are central.

Hand tools and fasteners

- Use a wrench or socket that fits the fastener closely. An adjustable wrench should be oriented so force bears against the fixed jaw.
- Screwdrivers should match the screw head. Pliers grip and bend but should not replace a wrench on a standard nut or bolt.
- A bolt generally passes through unthreaded parts and is secured by a nut; a screw often threads directly into material or a tapped hole.

Measuring and cutting

- A tape measure and steel rule handle common linear measurements. Calipers and micrometers provide more precise measurement.
- A hacksaw cuts metal; the teeth generally point in the direction of the cutting stroke for the tool's intended setup.
- Files remove small amounts of material and finish surfaces. Use the proper file shape and clean it with a file card.

Power tools and safety

- Wear eye protection when chips, dust, sparks, or broken material may be produced.
- Secure work before drilling or cutting. Remove chuck keys before operating a drill press.
- Disconnect power before changing blades, bits, or performing service when required by the equipment procedure.
- Guards should remain in place unless an approved procedure specifically requires removal.

SUBTEST REVIEW

Shop Information Practice Questions

43. Which tool is best suited for accurately measuring a small shaft diameter?

- A. Claw hammer
- B. Micrometer
- C. Cold chisel
- D. Pipe wrench

44. Before starting a drill press, the workpiece should usually be

- A. held by hand
- B. secured with a clamp or vise
- C. coated with paint
- D. placed on the floor

45. Which tool is commonly used to cut metal bar or tubing by hand?

- A. Hacksaw
- B. Wood chisel
- C. Mallet
- D. Soldering iron

46. Why should a chuck key be removed before starting a drill press?

- A. It can become a dangerous projectile
- B. It increases bit speed
- C. It prevents lubrication
- D. It weakens the workpiece

47. Which item is a fastener that is commonly used with a nut?

- A. Bolt
- B. File
- C. Punch
- D. Gasket

48. What is the safest first action before changing a blade on a portable power saw?

- A. Increase the speed setting
- B. Disconnect the power source
- C. Remove the blade guard permanently
- D. Oil the work surface

SUBTEST REVIEW

Shop Information Answer Explanations

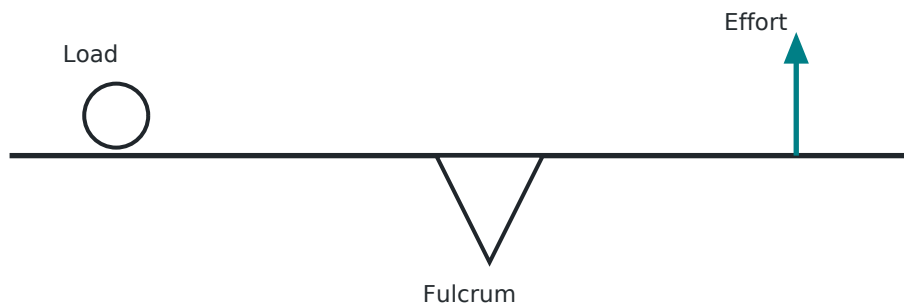
- 43. B** A micrometer is designed for precise measurement of small dimensions.
- 44. B** Securing the work prevents the bit from grabbing and spinning the workpiece.
- 45. A** A hacksaw uses a fine-toothed blade intended for cutting metal and similar materials.
- 46. A** A key left in the chuck can be thrown forcefully when the spindle turns.
- 47. A** A bolt typically passes through parts and is secured by a nut.
- 48. B** Prevent accidental startup by disconnecting power according to the tool's procedure.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Mechanical Comprehension (MC)

Mechanical Comprehension measures understanding of forces, motion, simple machines, fluids, gears, pulleys, and basic physical principles. Draw a simple diagram and reason from the principle before calculating.



Concept illustration

Force, work, and energy

- Force can change an object's motion. Mass measures inertia; weight is the gravitational force on a mass.
- Work equals force applied through a distance in the direction of the force. Power is the rate at which work is done.
- Kinetic energy is energy of motion. Gravitational potential energy increases with mass and height.

Levers and torque

- Torque depends on force and perpendicular distance from the pivot. The same force creates more torque when applied farther from the fulcrum.
- Levers trade force for distance. A longer effort arm can reduce the force required to balance or move a load.
- In equilibrium, clockwise and counterclockwise torques balance.

SUBTEST REVIEW

Gears, pulleys, and inclined planes

- Meshed gears rotate in opposite directions. A smaller gear rotates faster than a larger gear when their teeth mesh directly.
- An ideal fixed pulley changes the direction of force but does not reduce the required force. Multiple supporting rope segments can provide mechanical advantage.
- An inclined plane reduces required force by increasing the distance over which the load is moved.

Fluids and pressure

- Pressure equals force divided by area. The same force on a smaller area produces greater pressure.
- In a confined fluid, applied pressure is transmitted throughout the fluid. Hydraulic systems use this principle to multiply force by using pistons with different areas.
- Buoyant force equals the weight of displaced fluid. An object floats when buoyant force balances its weight.

Mechanical Comprehension Practice Questions

49. A wrench is used to turn a tight bolt. Which change most directly increases torque without increasing force?

- A. Use a shorter wrench
- B. Push closer to the bolt
- C. Use a longer wrench
- D. Push parallel to the wrench handle

50. Two meshed gears have different sizes. If the small gear drives the large gear, the large gear normally rotates

- A. faster in the same direction
- B. faster in the opposite direction
- C. slower in the same direction
- D. slower in the opposite direction

51. A fixed pulley attached to a ceiling primarily

- A. reduces the load's mass
- B. changes the direction of the applied force
- C. eliminates friction
- D. doubles the distance the load moves

52. A force of 100 pounds acts on an area of 5 square inches. What pressure is produced?

- A. 20 psi
- B. 95 psi
- C. 105 psi
- D. 500 psi

53. Which object has the greatest gravitational potential energy, assuming the same height?

- A. A 2-kg object
- B. A 5-kg object
- C. A 7-kg object
- D. A 10-kg object

54. An inclined plane makes lifting a load easier primarily by

- A. reducing the distance moved
- B. increasing the distance over which force is applied
- C. eliminating the load's weight
- D. increasing friction

Mechanical Comprehension Answer Explanations

49. C Torque increases with perpendicular distance from the pivot, so a longer wrench increases leverage.

50. D Meshed gears turn in opposite directions, and the larger gear rotates more slowly.

51. B An ideal fixed pulley changes the direction of force but has a mechanical advantage of 1.

52. A Pressure = force/area = $100/5 = 20$ pounds per square inch.

53. D At the same height, greater mass produces greater gravitational potential energy.

54. B The ramp trades a longer movement distance for a lower required force.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

Assembling Objects (AO)

Assembling Objects measures spatial visualization: determining how separate pieces fit together or how an object will look after rotation and assembly. The section is visual, so preparation should emphasize systematic comparison rather than verbal shortcuts.

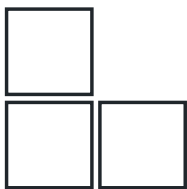


Figure A



Figure B



Figure C

Concept illustration

SUBTEST REVIEW

Track fixed relationships

- Choose one distinctive feature as an anchor, such as a notch, shaded edge, or unusual angle.
- When a piece rotates, distances and adjacency remain constant. Left and right may change on the page, but connected edges stay connected.
- Do not mirror a piece unless the question actually allows flipping. Rotation and reflection are different transformations.

Eliminate impossible choices

- Check whether edges that must touch have compatible lengths and shapes.
- Count exposed corners, holes, and marked surfaces. A correct assembly preserves all features unless a feature becomes hidden inside the object.
- Use negative space: compare the gaps that would remain after pieces are joined.

Work efficiently

- Mentally rotate one piece at a time. Trying to move every piece simultaneously overloads working memory.
- Eliminate choices with obvious contradictions before attempting a complete mental assembly.
- Practice with block arrangements, tangrams, paper folding, and cube nets to strengthen spatial manipulation.

Assembling Objects Practice Questions

55. Three identical square blocks form an L shape. Which change produces a straight row of three blocks?

- A. Move the upper block beside the far end of the bottom row
- B. Rotate the entire L shape 90 degrees
- C. Flip only the bottom-left block
- D. Remove the center block

56. A piece has a notch on its top edge. After a 180-degree rotation in the plane, where is the notch?

- A. Top edge
- B. Bottom edge
- C. Left edge
- D. It disappears

57. Two pieces share a matching diagonal edge. Which action can join those edges without changing the pieces?

- A. Translate and rotate one piece
- B. Stretch one piece
- C. Mirror both pieces through the page
- D. Remove the diagonal edges

- 58.** A cube net contains six squares. Which feature must be true after assembly?
- A. Every square touches every other square
 - B. Exactly one square becomes the cube's interior
 - C. All six squares become exterior faces
 - D. Two squares overlap completely
- 59.** A marked dot is on the outside surface of a piece before assembly. After assembly, the dot can become hidden only if
- A. the marked surface faces inward
 - B. the piece is rotated
 - C. another piece is a different color
 - D. the object is viewed from above
- 60.** Which operation changes handedness and therefore cannot be achieved by rotation alone?
- A. Translation
 - B. Quarter-turn rotation
 - C. Reflection
 - D. Half-turn rotation

Assembling Objects Answer Explanations

- 55. A** Relocating the upper block to the open end creates three collinear blocks. Rotating the entire arrangement preserves the L shape.
- 56. B** A 180-degree rotation moves the top edge to the bottom while preserving the notch.
- 57. A** Rigid pieces may be translated and rotated. Stretching or removing material changes the pieces.
- 58. C** A cube has six exterior square faces; a valid net folds without overlap.
- 59. A** A surface becomes hidden when it faces the interior or is covered by another piece.
- 60. C** Reflection creates a mirror image. Rotation preserves handedness.

Review rule

For every missed question, write the tested principle in one sentence and solve or explain the question again without looking at the answer.

PREPARE ACROSS EVERY SUBTEST

Turn review into a complete study plan

Use guided lessons and practice for the AFQT, technical, mechanical, and spatial subtests.

[Explore the Course](#)

QUICK REFERENCE

Quick Reference: Math Formulas

Arithmetic and algebra

Topic	Formula or rule
Percent	$\text{part} = \text{percent} \times \text{whole}$; $\text{percent} = \text{part} / \text{whole} \times 100$
Percent change	$\text{change} / \text{original} \times 100 \text{ percent}$
Average	$\text{sum of values} / \text{number of values}$
Distance	$\text{distance} = \text{rate} \times \text{time}$
Simple interest	$\text{interest} = \text{principal} \times \text{rate} \times \text{time}$
Slope	$(\text{change in } y) / (\text{change in } x)$
Distributive property	$a(b + c) = ab + ac$
Exponent product	$a^m \times a^n = a^{(m+n)}$
Exponent quotient	$a^m / a^n = a^{(m-n)}$, for a not equal to 0

Geometry

Figure	Measure
Rectangle	$\text{area} = \text{length} \times \text{width}$; $\text{perimeter} = 2(\text{length} + \text{width})$
Triangle	$\text{area} = 1/2 \times \text{base} \times \text{height}$
Circle	$\text{circumference} = 2 \times \pi \times \text{radius}$; $\text{area} = \pi \times \text{radius}^2$
Rectangular solid	$\text{volume} = \text{length} \times \text{width} \times \text{height}$
Cylinder	$\text{volume} = \pi \times \text{radius}^2 \times \text{height}$
Right triangle	$a^2 + b^2 = c^2$

QUICK REFERENCE

Quick Reference: Vocabulary

Common prefixes

Prefix	Meaning	Example idea
anti-	against	antifreeze works against freezing
bene-	good	beneficial means producing good results
circum-	around	circumnavigate means travel around
de-	down, away, or reverse	decrease means become smaller
inter-	between	interstate means between states
pre-	before	predict means state beforehand
sub-	under	submarine travels under water
trans-	across	transport means carry across

Common roots

Root	Meaning	Examples
cred	believe	credible, credit
dict	say	dictate, verdict
port	carry	portable, transport
scrib/script	write	describe, manuscript
spect	look	inspect, spectator
vid/vis	see	video, visible
tract	pull or draw	attract, tractor
rupt	break	rupture, interrupt

Use context first

Word parts can narrow the choices, but they do not replace the sentence. Confirm that the final choice fits the word type, tone, and degree.

QUICK REFERENCE

Quick Reference: Science

Area	High-yield facts
Cells	Membrane regulates movement; nucleus contains DNA; mitochondria release usable energy; ribosomes build proteins.
Genetics	Genes are DNA segments; alleles are gene variants; genotype influences phenotype.
Ecology	Energy flows from producers to consumers; matter cycles; decomposers recycle nutrients.
Earth science	Weathering breaks material; erosion transports it; plate movement drives many earthquakes and volcanoes.
Astronomy	Rotation produces day and night; revolution and axial tilt produce seasons; gravity governs orbits.
Chemistry	Atomic number = protons; ions have unequal protons and electrons; chemical reactions rearrange atoms.
Physics	Speed = distance/time; acceleration is change in velocity; force can change motion; energy is conserved in closed systems.

Experimental design

- **Independent variable:** the factor deliberately changed.
- **Dependent variable:** the measured response.
- **Control:** a comparison condition without the tested treatment.
- **Constant:** a factor kept the same across groups.
- **Replication:** repeated trials that help reveal random variation.

QUICK REFERENCE

Quick Reference: Electronics and Mechanics

Electronics

Relationship	Rule
Ohm's law	$V = I \times R$
Current	$I = V / R$
Resistance	$R = V / I$
Power	$P = V \times I$
Series circuit	same current; resistances add
Parallel circuit	same branch voltage; adding branches lowers equivalent resistance
Open circuit	broken path; no continuous current
Short circuit	unintended low-resistance path; potentially excessive current

Mechanics

Concept	Rule
Torque	force x perpendicular lever arm
Pressure	force / area
Work	force x distance in the force direction
Power	work / time
Meshed gears	opposite directions; smaller gear turns faster
Fixed pulley	changes force direction; ideal mechanical advantage = 1
Inclined plane	reduces force by increasing distance

QUICK REFERENCE

Quick Reference: Auto and Shop

System or tool	Purpose
Battery	supplies energy for starting and electrical loads when needed
Alternator	generates electrical power while the engine runs
Starter	turns the engine during starting
Radiator	releases heat from coolant
Engine oil	reduces friction and carries heat and contaminants
Differential	allows drive wheels to turn at different speeds
Micrometer	precise measurement of small dimensions
Hacksaw	hand cutting of metal
Torque wrench	tightens a fastener to a specified torque
Vise or clamp	secures work during cutting or drilling

Non-negotiable safety habits

- Wear the required eye, hearing, respiratory, and hand protection for the task.
- Secure work rather than holding it by hand near a moving tool.
- Disconnect or isolate energy before changing accessories or servicing equipment when the procedure requires it.
- Keep guards in place and remove adjustment keys before startup.
- Use the correct tool and inspect it before use.

MIXED PRACTICE

Mixed Practice Test

Complete these 50 additional questions without a calculator. The questions are grouped only for page layout; treat the set as mixed practice.

61. A cell placed in a solution loses water and shrinks. The solution is most likely

- A. hypotonic to the cell
- B. hypertonic to the cell
- C. identical to pure water
- D. a source of cellular energy

62. A box contains 18 red parts and 12 blue parts. What fraction of the parts are blue?

- A. $\frac{2}{3}$
- B. $\frac{3}{5}$
- C. $\frac{2}{5}$
- D. $\frac{1}{3}$

63. The word *obsolete* most nearly means

- A. outdated
- B. dangerous
- C. expensive
- D. flexible

64. Passage: The crew delayed the launch because wind speeds exceeded the approved limit. Why was the launch delayed?

- A. The equipment was missing
- B. The wind was too strong
- C. The crew arrived late
- D. The launch site was closed

65. Solve $3(x + 4) = 27$.

- A. $x = 3$
- B. $x = 5$
- C. $x = 9$
- D. $x = 13$

66. Which device primarily allows current to flow in one direction?

- A. Capacitor
- B. Diode
- C. Fuse
- D. Resistor

67. During which engine stroke does the piston draw the air-fuel mixture into the cylinder?

- A. Intake
- B. Compression
- C. Power
- D. Exhaust

68. Which tool is best for tightening a bolt to an exact manufacturer specification?

- A. Slip-joint pliers
- B. Torque wrench
- C. Ball-peen hammer
- D. Flat file

69. A smaller hydraulic piston applies pressure to a larger piston. The larger piston can produce greater force because it has

- A. less area
- B. greater area
- C. less pressure
- D. greater speed

70. A shape is rotated 90 degrees clockwise. Which property must remain unchanged?

- A. Its orientation on the page
- B. Its side lengths
- C. Its top edge location
- D. Its left-right position

71. Which blood cells primarily transport oxygen?

- A. Red blood cells
- B. Platelets
- C. Neurons
- D. Bone cells

72. A worker earns \$18 per hour for 35 hours. What is the gross pay?

- A. \$530
- B. \$610
- C. \$630
- D. \$650

73. The word *abundant* most nearly means

- A. scarce
- B. plentiful
- C. hidden
- D. fragile

74. Passage: Unlike the older pump, the new model automatically shuts off when pressure becomes excessive. What advantage is described?

- A. Lower purchase price
- B. Automatic overpressure protection
- C. Greater weight
- D. Manual operation

75. What is 15 percent of 240?

- A. 24
- B. 30
- C. 36
- D. 40

76. Two 6-ohm resistors are connected in series. What is the total resistance?

- A. 3 ohms
- B. 6 ohms
- C. 12 ohms
- D. 36 ohms

77. Which component helps keep an engine from overheating by circulating coolant?

- A. Water pump
- B. Differential
- C. Muffler
- D. Clutch

78. Which tool is designed to make an indentation that guides a drill bit?

- A. Center punch
- B. Pipe wrench
- C. Wood rasp
- D. Soldering iron

79. A 20-pound force acts 3 feet from a pivot. What torque is produced when the force is perpendicular?

- A. 6 ft-lb
- B. 17 ft-lb
- C. 23 ft-lb
- D. 60 ft-lb

80. A reflected image differs from a rotated image because reflection

- A. changes handedness
- B. preserves every orientation
- C. changes side lengths
- D. removes marked features

81. Which layer of Earth is liquid and composed largely of iron and nickel?

- A. Crust
- B. Mantle
- C. Outer core
- D. Inner core

82. A store increases a \$50 price by 10 percent. What is the new price?

- A. \$5
- B. \$45
- C. \$55
- D. \$60

83. The word *verify* most nearly means

- A. confirm
- B. delay
- C. measure
- D. remove

84. Passage: The manual recommends checking the filter monthly, but dusty conditions may require more frequent inspection. What follows from the passage?

- A. The filter should never be replaced
- B. Inspection frequency can depend on conditions
- C. Dust improves filter life
- D. Monthly inspection is prohibited

85. Factor $x^2 + 7x + 12$.

- A. $(x + 2)(x + 6)$
- B. $(x + 3)(x + 4)$
- C. $(x - 3)(x - 4)$
- D. $(x + 1)(x + 12)$

86. A 24-volt circuit carries 3 amperes. What is the resistance?

- A. 8 ohms
- B. 21 ohms
- C. 27 ohms
- D. 72 ohms

87. Which part carries exhaust gases away from the engine and helps reduce noise?

- A. Muffler and exhaust system
- B. Fuel injector
- C. Radiator cap
- D. Brake caliper

88. Which safety device covers the dangerous moving portion of a machine?

- A. Guard
- B. Caliper
- C. Gasket
- D. Shim

89. If the same force is applied over a smaller area, pressure

- A. decreases
- B. remains constant
- C. increases
- D. becomes zero

90. A cube is rotated. Which relationship remains fixed?

- A. Which face appears on top
- B. Which faces are opposite each other
- C. Which face appears on the left
- D. The direction of every printed arrow

91. Which process converts liquid water to water vapor?

- A. Condensation
- B. Evaporation
- C. Freezing
- D. Deposition

92. A 12-foot board is cut into pieces 2.5 feet long. How many complete pieces can be cut?

- A. 3
- B. 4
- C. 5
- D. 6

93. The word *resilient* most nearly means

- A. able to recover
- B. easy to break
- C. completely rigid
- D. highly visible

94. Passage: The two metals expanded by different amounts when heated. Engineers therefore added a flexible joint between them. Why was the joint added?

- A. To make both metals identical
- B. To accommodate unequal expansion
- C. To prevent all temperature change
- D. To increase electrical resistance

95. What is the circumference of a circle with radius 5?

- A. 5π
- B. 10π
- C. 25π
- D. 50π

96. Which component changes alternating voltage levels through electromagnetic induction?

- A. Transformer
- B. Fuse
- C. Switch
- D. Battery

97. What is the purpose of the transmission in a vehicle?

- A. Adjust the relationship between engine speed and wheel speed
- B. Store coolant
- C. Measure tire pressure
- D. Control exhaust emissions directly

98. Which tool is used to smooth or shape material by removing small amounts from a surface?

- A. File
- B. Level
- C. Clamp
- D. Plumb bob

99. A single movable pulley ideally supports a load with two rope segments. Its ideal mechanical advantage is

- A. 1
- B. 2
- C. 3
- D. 4

100. A folded net produces a cube. Two squares that share an edge in the net must

- A. always become opposite faces
- B. remain adjacent faces after folding
- C. overlap after folding
- D. become interior surfaces

101. Which organ filters blood and produces urine?

- A. Lung
- B. Kidney
- C. Stomach
- D. Pancreas

102. A machine produces 48 parts in 6 hours. At the same rate, how many parts are produced in 9 hours?

- A. 64
- B. 72
- C. 81
- D. 96

103. The word *inferior* most nearly means

- A. lower in quality
- B. unusually large
- C. carefully measured
- D. temporarily unavailable

104. Passage: The coating does not make the metal waterproof, but it slows corrosion by limiting contact with moisture. Which statement is accurate?

- A. The coating eliminates corrosion permanently
- B. The coating reduces exposure to moisture
- C. The coating dissolves the metal
- D. The coating increases water contact

105. Solve the inequality $-2x > 10$.

- A. $x > -5$
- B. $x < -5$
- C. $x > 5$
- D. $x < 5$

106. In a parallel circuit, the voltage across each branch is

- A. always zero
- B. the same as the source voltage
- C. divided equally regardless of resistance
- D. greater than the source voltage

107. A vehicle pulls to one side during braking. Which system should be inspected first?

- A. Brake system
- B. Cooling system
- C. Exhaust system
- D. Fuel tank

108. Which abrasive material is commonly bonded to paper or cloth for smoothing surfaces?

- A. Sandpaper
- B. Solder
- C. Gasket material
- D. Thread sealant

109. A 10-pound object is lifted 4 feet. Ignoring losses, how much work is done?

- A. 2.5 ft-lb
- B. 6 ft-lb
- C. 14 ft-lb
- D. 40 ft-lb

110. A triangular piece is turned but not flipped. Which feature is impossible to change?

- A. Its position
- B. Its orientation
- C. The order of its vertices around the boundary
- D. Which edge appears at the top

Mixed Practice Answer Explanations

61. B A hypertonic solution has a higher solute concentration and draws water out of the cell.

62. C There are 30 parts total, and $12/30$ reduces to $2/5$.

63. A Obsolete means no longer current or in general use.

64. B The stated reason is that wind speeds exceeded the limit.

65. B Divide by 3 to get $x + 4 = 9$, then $x = 5$.

66. B A diode is designed to conduct mainly in one direction.

67. A The intake stroke draws the mixture into the cylinder.

68. B A torque wrench measures and controls tightening torque.

69. B The same fluid pressure acting on greater area produces greater force.

70. B Rigid rotation preserves distances and side lengths.

71. A Hemoglobin in red blood cells carries oxygen.

72. C $18 \times 35 = 630$.

73. B Abundant means plentiful or more than enough.

74. B The passage directly states that the new pump shuts off under excessive pressure.

75. C $0.15 \times 240 = 36$.

76. C Series resistances add: $6 + 6 = 12$ ohms.

77. A The water pump circulates coolant through the engine and radiator.

78. A A center punch marks the drilling location and helps prevent wandering.

79. D Torque = force $\times$ distance = $20 \times 3 = 60$ ft-lb.

80. A Reflection creates a mirror image and reverses handedness.

81. C The outer core is liquid; the inner core is solid.

82. C Ten percent of \$50 is \$5, so the new price is \$55.

83. A To verify is to confirm the truth or accuracy of something.

84. B The passage states that dusty conditions may justify more frequent checks.

- 85. B** The factors must multiply to 12 and add to 7: 3 and 4.
- 86. A** $R = V/I = 24/3 = 8$ ohms.
- 87. A** The exhaust system routes gases, and the muffler reduces sound.
- 88. A** A guard separates the operator from hazardous motion.
- 89. C** Pressure equals force divided by area; decreasing area increases pressure.
- 90. B** Rotation changes view orientation but preserves adjacency and opposite-face relationships.
- 91. B** Evaporation is the change from liquid to gas.
- 92. B** $12 / 2.5 = 4.8$, so four complete 2.5-foot pieces can be cut.
- 93. A** Resilient means able to recover or return to shape after difficulty or deformation.
- 94. B** The flexible joint allows movement caused by different thermal expansion.
- 95. B** Circumference = $2 \times \pi \times r = 10\pi$.
- 96. A** A transformer changes AC voltage using coupled coils and magnetic flux.
- 97. A** The transmission provides different gear ratios between the engine and drive wheels.
- 98. A** A file removes small amounts of material and finishes a surface.
- 99. B** Two supporting rope segments provide an ideal mechanical advantage of 2.
- 100. B** Squares sharing an edge hinge along that edge and remain adjacent.
- 101. B** The kidneys filter blood, regulate fluid balance, and produce urine.
- 102. B** The rate is 8 parts per hour; $8 \times 9 = 72$.
- 103. A** Inferior means lower in quality, rank, or position.
- 104. B** The passage says the coating limits moisture contact and slows corrosion.
- 105. B** Divide by -2 and reverse the inequality sign: $x < -5$.
- 106. B** Each parallel branch is connected across the same two nodes as the source.
- 107. A** Unequal braking force can cause the vehicle to pull to one side.
- 108. A** Sandpaper uses abrasive grains to remove and smooth material.
- 109. D** Work = force x distance = $10 \times 4 = 40$ foot-pounds.
- 110. C** Rotation and translation preserve the clockwise or counterclockwise order of vertices; reflection reverses it.

KEEP IMPROVING AFTER MIXED PRACTICE**Review the exact skills behind each miss**

The Mometrix course organizes targeted lessons and practice so weaknesses become a repeatable study plan.

[Explore the Course](#)

STUDY PLANS

Four-Week Study Plan

Week	Primary work
Week 1	Take a baseline set. Review Arithmetic Reasoning and Mathematics Knowledge fundamentals. Begin a vocabulary log.
Week 2	Review Word Knowledge and Paragraph Comprehension. Continue daily no-calculator arithmetic. Add General Science.
Week 3	Review Electronics, Auto, Shop, Mechanical, and Assembling Objects. Complete mixed practice every other day.
Week 4	Use timed mixed sets. Revisit errors by category. Reduce new material during the final two days and focus on accuracy, rest, and logistics.

Daily 60-minute template

1. 10 minutes: vocabulary or science fact review.
2. 20 minutes: focused lesson review.
3. 20 minutes: practice questions without notes.
4. 10 minutes: error log and correction.

Error-log categories

- **Content gap:** the underlying fact, formula, or vocabulary was unknown.
- **Setup error:** the correct information was known but translated incorrectly.
- **Execution error:** arithmetic, algebra, units, or copying was wrong.
- **Reading error:** a key word, condition, or comparison was missed.
- **Pacing error:** too much time was spent or the answer was rushed.

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STUDY PLANS

Two-Week Intensive Plan

Day	Focus
Days 1-2	Baseline, Arithmetic Reasoning, fractions, percents, rates
Days 3-4	Mathematics Knowledge, algebra, geometry, exponents
Days 5-6	Word Knowledge and Paragraph Comprehension
Day 7	Mixed AFQT practice and review
Days 8-9	General Science and Electronics Information
Days 10-11	Auto, Shop, and Mechanical Comprehension
Day 12	Assembling Objects and mixed technical practice
Day 13	Timed mixed practice; review only the weakest two areas
Day 14	Light review, test-day preparation, and rest

**Do not cram
blindly**

A short schedule works only when practice is followed by correction. Completing more questions without understanding mistakes creates false confidence.

Final-day checklist

- Confirm the testing location, reporting time, and identification requirements.
- Do not bring a calculator for use on the ASVAB.
- Sleep adequately and eat normally; avoid last-minute changes to routine.
- Review formulas and vocabulary briefly, then stop studying early enough to rest.

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RESOURCES

Additional ASVAB Resources

The following links are embedded as standard PDF hyperlinks. Some resources are free; paid products are labeled so readers can distinguish them.

- [StudyGuideZone ASVAB overview](#) (Free)
- [Mometrix free ASVAB practice test](#) (Free)
- [Mometrix free Arithmetic Reasoning practice](#) (Free)
- [Mometrix free Mathematics Knowledge practice](#) (Free)
- [Mometrix free Word Knowledge practice](#) (Free)
- [Mometrix free Paragraph Comprehension practice](#) (Free)
- [Mometrix free General Science practice](#) (Free)
- [Mometrix free Electronics Information practice](#) (Free)
- [Mometrix free Auto and Shop practice](#) (Free)
- [Mometrix free Mechanical Comprehension practice](#) (Free)
- [Mometrix ASVAB online prep course](#) (Paid product)
- [Mometrix ASVAB study guide](#) (Paid product)
- [Mometrix ASVAB Math Cram Sheet](#) (Free PDF)

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Free practice pages may also describe Mometrix paid products. The course and study-guide links above lead directly to paid-product information pages.

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REFERENCES

Reference Notes

Test-format and scoring information in this guide was reviewed against current public information from the official ASVAB program. Because testing procedures and service requirements can change, confirm current instructions with the official program and an authorized recruiter.

Official ASVAB Fact Sheet

Official ASVAB - What to Expect

Official ASVAB - Subtests

Official ASVAB - Understanding Scores

Official ASVAB - Preparing for the Test

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