

Aircraft Maintenance Technology

Orientation Mathematics Sample Exam

1. Solve the equation.

$$[(4 \times -3) + (-9 \times 2)] \div 2 =$$

- A. -30
 - B. -15
 - C. 5
 - D. 15
2. An airplane flying a distance of 750 miles used 60 gallons of fuel. How many gallons will it need to fly 2500 miles?
- A. 31,250
 - B. 250
 - C. 9,375
 - D. 200
3. Convert the binary number 00001111 to a whole number.
- A. 31
 - B. 15
 - C. 8
 - D. 7

4. A rectangular shaped fuel tank measures 27-1/2 inches in length, 3/4 foot in width, and 8-1/4 inches in depth. How many gallons will the tank contain?

(231 cu in = 1 gallon)

Volume = Length \times Width \times Depth

- A. 7.366
B. 8.83
C. 170.156
D. .7366
5. Select the container size that will be equal in volume to 60 gallons of fuel.

(7.5 gal = 1 cu ft)

- A. 7.0 cubic feet.
B. 7.5 cubic feet.
C. 8.0 cubic feet.
D. 8.5 cubic feet.
6. A six-cylinder engine with a bore (diameter) of 3.5 inches and a stroke (height) of 4.5 inches will have a total piston displacement of

Area of a circle: $A = \pi(\text{Radius})^2$

Volume of a cylinder: $V = \text{Area} \times \text{Height}$

- A. 256.88 cubic inches.
B. 259.77 cubic inches.
C. 43.3 cubic inches.
D. 49.9 cubic inches.

7. A rectangular-shaped fuel tank measures $37\frac{1}{2}$ inches in length, 14 inches in width, and $8\frac{1}{4}$ inches in depth. How many cubic inches are within the tank?

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Depth}$$

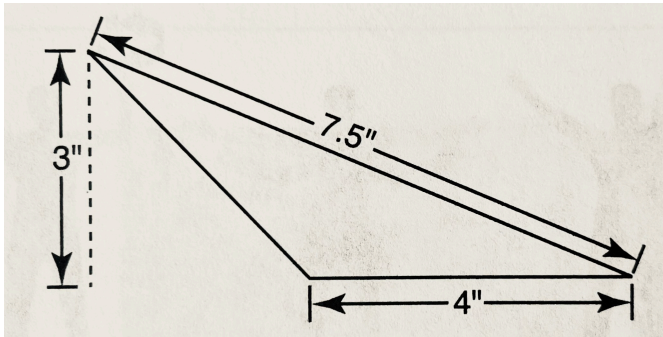
- A. 59.75
B. 597.5
C. 433.125
D. 4331.25
8. What force is exerted on the piston in a hydraulic cylinder if the area of the piston is 1.2 square inches and the fluid pressure is 850 PSI?

$$\text{Force} = \text{Area} \times \text{Pressure}$$

- A. 1,020 pounds.
B. 960 pounds.
C. 900 pounds.
D. 850 pounds.
9. What size sheet of sheet metal is required to fabricate a cylinder 20 inches long and 8 inches in diameter?

$$\text{Circumference} = \pi \times \text{Diameter}$$

- A. 20 inches \times $24\frac{5}{32}$ inches.
B. 20 inches \times $25\frac{5}{32}$ inches.
C. 20 inches \times $24\frac{9}{64}$ inches.
D. 20 inches \times $25\frac{9}{64}$ inches.
10. Solve the equation. $(-3 + 2)(-12 - 4) + (-4 + 6) \times 3$
- A. 20
B. 22
C. 24
D. 28



11. Find the area of the triangle shown.

Area of a triangle: $A = \frac{1}{2}(\text{Base} \times \text{Height})$

- A. 12 square inches.
- B. 6 square inches.
- C. 15 square inches.
- D. 9 square inches.

12. A four-cylinder aircraft engine has a cylinder bore (diameter) of 3.78 inches. With the piston on bottom center, the top of the piston measures 4.0 inches (height) from the bottom of the cylinder. What is the approximate piston displacement of this engine?

Area of a circle: $A = \pi(\text{Radius})^2$

Volume of a cylinder: $V = \text{Area} \times \text{Height}$

- A. 200 cubic inches.
- B. 360 cubic inches.
- C. 235 cubic inches.
- D. 300 cubic inches.

13. Which decimal is most nearly equal to a radius of $\frac{31}{64}$?
- A. 0.2065
 - B. 0.4844
 - C. 0.3164
 - D. 0.5131
14. The radius of a piece of round stock is $\frac{7}{32}$. Select the decimal which is most nearly equal to the diameter.
- A. 0.2187
 - B. 0.4375
 - C. 0.3531
 - D. 0.1257
15. Select the fraction which is equal to 0.0250.
- A. $\frac{1}{4}$
 - B. $\frac{1}{40}$
 - C. $\frac{1}{400}$
 - D. $\frac{1}{4000}$
16. A certain aircraft bolt has an over length of $1\frac{1}{2}$ inches, with a shank length of $1\frac{3}{16}$, and a threaded portion length of $\frac{5}{8}$ inch. What is the length of the portion with no threads?
- A. .5625 inch.
 - B. .8750 inch.
 - C. .3125 inch.
 - D. .6250 inch.

17. What is the piston displacement of a master cylinder with a 1.5-inch diameter bore and a piston stroke (height) of 4 inches?

$$\text{Area of a circle: } A = \pi(\text{Radius})^2$$

$$\text{Volume of a cylinder: } V = \text{Area} \times \text{Height}$$

- A. 9.4247 cubic inches.
- B. 7.0686 cubic inches.
- C. 8.2785 cubic inches.
- D. 6.1541 cubic inches.

18. A rectangular-shaped fuel tank measures 60 inches in length, 30 inches in width, and 12 inches in depth. How many cubic feet are within the tank?

$$\text{Volume of a rectangle: } \text{Volume} = \text{Length} \times \text{Width} \times \text{Depth}$$

- A. 12.5 cubic feet.
- B. 15.0 cubic feet.
- C. 18 cubic feet.
- D. 21 cubic feet.

19. What is the fractional equivalent of 0.40”?

- A. $\frac{1}{3}$
- B. $\frac{3}{8}$
- C. $\frac{1}{5}$
- D. $\frac{2}{5}$

20. If an aircraft requires 70 gallons of fuel to fly 875 miles, how much fuel would be required to fly 3,000 miles?

- A. 104 gallons.
- B. 144 gallons.
- C. 240 gallons.
- D. 180 gallons.

