

Note: Answers are given on last page.

1 (8379): What power of 10 is equal to 1,000,000,000?

- A: 10 to the sixth power.
 B: 10 to the tenth power.
 C: 10 to the ninth power.

2 (8380): Find the square root of 1,746.

- A: 41.7852.
 B: 41.7752.
 C: 40.7742.

$$\sqrt{(-4)^0 + 6 + (\sqrt[4]{1296})(\sqrt{3})^2} =$$

FIGURE 52.—Equation.

3 (8381): (Refer to Figure 52.)

Solve the equation.

- A: 115
 B: 4.472.
 C: 5

4 (8382): Find the square root of 3,722.1835.

- A: 61.00971.
 B: 61.00.
 C: 61.0097.

5 (8383): Which of the following is the square root of $(-1776)/(-2) - 632$?

- A: 128.
 B: 256.
 C: 16.

6 (8383.1): Solve the equation:

- A: 12.
 B: 60.
 C: 76.

$$(\sqrt{100} + \sqrt{36} - \sqrt{16}) =$$

Figure 69. Equation © ASA

7 (8384): Find the cube of 64.

- A: 4
 B: 192
 C: 262,144.

8 (8385): Find the value of 10 raised to the negative sixth power.

- A: 0.000001.
 B: 0.000010.
 C: 0.0001.

9 (8386): What is the square root of 4 raised to the fifth power?

- A: 32
 B: 64
 C: 20

10 (8387): The number 3.47×10 to the negative fourth power is equal to

- A: .00347.
 B: 34,700.
 C: .000347.

11 (8388): Which alternative answer is equal to 16,300?

- A: 1.63×10 to the fourth power.
 B: 1.63×10 to the negative third power.
 C: 163×10 to the negative second power.

12 (8389): Find the square root of 124.9924.

- A: 111.8×10 to the third power.
 B: $.1118 \times 10$ to the negative second power.
 C: $1,118 \times 10$ to the negative second power.

13 (8390): What is the square root of 16 raised to the fourth power?

A: 1,024.

B: 4,096.

C: 256.

14 (8391): (Refer to Figure 53.)

Solve the equation.

A: .0297.

B: .1680.

C: .0419.

$$\frac{\sqrt{31} + \sqrt{43}}{(17)^2} =$$

FIGURE 53.—Equation.

15 (8392): The result of 7 raised to the third power plus the square root of 39 is equal to

A: 349.24.

B: .34924.

C: 343.24.

16 (8393): Find the square root of 1,824.

A: 42.708 x 10 to the negative second power.

B: .42708.

C: .42708 x 10 to the second power.

17 (8393.1): Which of the figures is using scientific notation? (see Figure 65)

A: 1.

B: 2.

C: both 1 and 2.

1 $3.47 \times 10^4 = 34,700.$

2 $2(4^{10}) = 2,097,152.$

Figure 65. Scientific Notation © ASA

18 (8393.2): Which alternative answer is equal to 5.59?
(See Figure 70)

A: 1.

B: 2.

C: 3.

1. $(\sqrt{31}) + (\sqrt{43}) \div 17^2$
2. $(\sqrt{31} + \sqrt{43}) \div 17^2$
3. $(\sqrt{31}) + (\sqrt{43}) - 17^2$

Figure 70. Alternative Answer © ASA

19 (8394): The total piston displacement of a specific engine is

A: dependent on the compression ratio.

B: the volume displaced by all the pistons during one revolution of the crankshaft.

C: the total volume of all the cylinders.

20 (8394.1): What is the surface area of a cube where a side (edge) measures 7.25 inches?

A: 381.078 cu. in.

B: 315.375 sq. in.

C: 52.5625 sq. in.

21 (8395): (Refer to Figure 54.) Compute the area of the trapezoid.

A: 52.5 square feet.

B: 60 square feet.

C: 76.5 square feet.

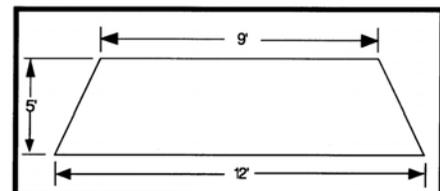


FIGURE 54.—Trapezoid Area.

22 (8395.1): What is the volume of a sphere with a radius of 4.5 inches?

(See Figure 71)

A: 47.71 cubic inches.

B: 381.7 square inches.

C: 381.7 cubic inches.

$$V = \frac{1}{6}\pi D^3$$

Figure 71. Volume of a Sphere © ASA

23 (8396): What size sheet of metal is required to fabricate a cylinder 20 inches long and 8 inches in diameter? (Note: $C = \pi \times D$)

A: 20 inches x 25-5/32 inches.

B: 20 inches x 24-9/64 inches.

C: 20 inches x 25-9/64 inches.

24 (8397): (Refer to Figure 55.) Find the area of the triangle shown.

A: 12 square inches.

B: 6 square inches.

C: 15 square inches.

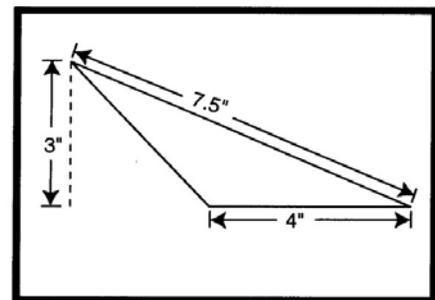


FIGURE 55.—Triangle Area.

25 (8398): 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?

A: 1,020 pounds.

B: 960 pounds.

C: 850 pounds.

26 (8399): 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?

A: 12.5.

B: 15.0.

C: 21.0.

27 (8400): Select the container size that will be equal in volume to 60 gallons of fuel. (7.5 gal = 1 cu ft)

A: 7.5 cubic feet.

B: 8.0 cubic feet.

C: 8.5 cubic feet.

28 (8401): (Refer to Figure 56.) Compute the area of the trapezoid.

A: 24 square feet.

B: 48 square feet.

C: 10 square feet.

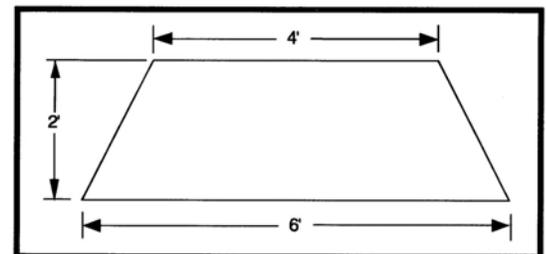


FIGURE 56.—Trapezoid Area.

29 (8402): (Refer to Figure 57.) Determine the area of the triangle formed by points A, B, and C. A to B = 7.5 inches A to D = 16.8 inches

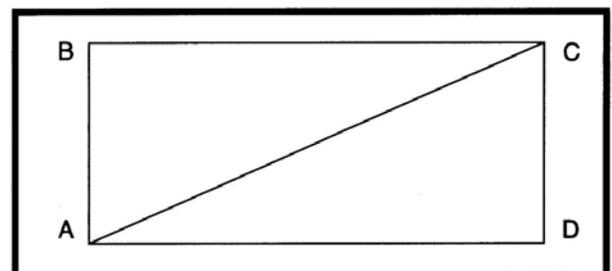


FIGURE 57.—Triangle Area.

- A: 42 square inches.
- B: 63 square inches.
- C: 126 square inches.

30 (8403): What is the piston displacement of a master cylinder with a 1.5-inch diameter bore and a piston stroke of 4 inches?

Hint: $Piston\ Displacement = \pi \times (bore/2)^2 \times stroke \times \# \text{ cylinders}$.

(This formula IS NOT on the FAA test, the quiz, nor on the final exam.)

- A: 9.4247 cubic inches.
- B: 7.0686 cubic inches.
- C: 6.1541 cubic inches.

31 (8404): How many gallons of fuel will be contained in a rectangular-shaped tank which measures 2 feet in width, 3 feet in length, and 1 foot 8 inches in depth? Note:(7.5 gal = 1 cu ft)

- A: 66.6.
- B: 75
- C: 45

32 (8405): 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 gal)

- A: 7.366.
- B: 8.83
- C: 170.156.

33 (8406): A four-cylinder aircraft engine has a cylinder bore of 3.78 inches and is 8.5 inches deep. With the piston on bottom center, the top of the piston measures 4.0 inches from the bottom of the cylinder. What is the approximate piston displacement of this engine?

Hint: $Piston\ Displacement = \pi \times (bore/2)^2 \times stroke \times \# \text{ cylinders}$.

(This formula IS NOT on the FAA test, the quiz, nor on the final exam.)

- A: 200 cubic inches.
- B: 360 cubic inches.
- C: 235 cubic inches.

34 (8407): A rectangular-shaped fuel tank measures 37-1/2 inches in length, 14 inches in width, and 8-1/4 inches in depth. How many cubic inches are within the tank?

- A: 525
- B: 433.125.
- C: 4,331.25.

35 (8408): A six-cylinder engine with a bore of 3.5 inches, a cylinder height of 7 inches and a stroke of 4.5 inches will have a total piston displacement of

- A: 256.88 cubic inches.
- B: 259.77 cubic inches.
- C: 43.3 cubic inches.

Hint: $Piston\ Displacement = \pi \times (bore/2)^2 \times stroke \times \# \text{ cylinders}$.

(This formula IS NOT on the FAA test, the quiz, nor on the final exam.)

36 (8409): Select the fraction which is equal to 0.025.

- A: 1/4.
- B: 1/40.
- C: 1/400.

37 (8410): 1.21875 is equal to

A: $\frac{83}{64}$.

B: $\frac{19}{16}$.

C: $\frac{39}{32}$.

38 (8411): If the volume of a cylinder with the piston at bottom center is 84 cubic inches and the piston displacement is 70 cubic inches, then the compression ratio is

A: 7:1.

B: 1.2:1.

C: 6:1.

39 (8412): Express $\frac{7}{8}$ as a percent.

A: 8.75 percent.

B: .875 percent.

C: 87.5 percent.

40 (8413): What is the speed of a spur gear with 42 teeth driven by a pinion gear with 14 teeth turning 420 RPM?

A: 588 RPM.

B: 160 RPM.

C: 140 RPM.

41 (8414): An engine develops 108 horsepower at 87 percent power. What horsepower would be developed at 65 percent power?

A: 81.

B: 70.

C: 61.

42 (8415): A certain aircraft bolt has an overall length of 1- $\frac{1}{2}$ inches, with a shank length of 1- $\frac{3}{16}$ inches, and a threaded portion length of $\frac{5}{8}$ inch. What is the grip length?

A: .5625 inch.

B: .8750 inch.

C: .3125 inch.

43 (8416): Select the fractional equivalent for a 0.0625 inch thick sheet of aluminum.

A: $\frac{1}{16}$.

B: $\frac{3}{64}$.

C: $\frac{1}{32}$.

44 (8417): Express $\frac{5}{8}$ as a percent.

A: .625 percent.

B: 6.25 percent.

C: 62.5 percent.

45 (8418): Select the decimal which is most nearly equal to $\frac{77}{64}$.

A: 0.08311.

B: 0.8311.

C: 1.2031.

46 (8419): An airplane flying a distance of 750 miles used 60 gallons of gasoline. How many gallons will it need to travel 2,500 miles?

A: 31,250.

B: 9,375.

C: 200

47 (8420): What is the speed ratio of a gear with 36 teeth meshed to a gear with 20 teeth?

A: 9:5.
B: 1:0.56.
C: 1:1.8.

48 (8421): A pinion gear with 14 teeth is driving a spur gear with 42 teeth at 140 RPM. Determine the speed of the pinion gear.

A: 588 RPM.
B: 420 RPM.
C: 126 RPM.

49 (8422): The parts department's profit is 12 percent on a new part. How much does the part cost if the selling price is \$145.60?

A: \$128.13.
B: \$125.60.
C: \$130.00

50 (8423): If an engine is turning 1,965 rpm at 65 percent power, what is its maximum rpm?

A: 2,653.
B: 3,023.
C: 3,242.

51 (8424): An engine of 98 horsepower maximum is running at 75 percent power. What is the horsepower being developed?

A: 87.00.
B: 33.30.
C: 73.50.

52 (8425): A blueprint shows a hole of 0.17187 to be drilled. Which fraction size drill bit is most nearly equal?

A: 11/64.
B: 9/32.
C: 11/32.

53 (8426): Which decimal is most nearly equal to a bend radius of 31/64?

A: 0.2065.
B: 0.4844.
C: 0.3164.

54 (8427): Sixty-five engines are what percent of 80 engines?

A: 81 percent.
B: 65 percent.
C: 52 percent.

55 (8428): The radius of a piece of round stock is 7/32. Select the decimal which is most nearly equal to the diameter.

A: 0.2187.
B: 0.4375.
C: 0.3531.

56 (8429): Maximum life for a certain part is 1100 hours. Recently, 15 of these parts were removed from different aircraft with an average life of 835.3 hours. What percent of the maximum part life has been achieved?

A: 75.9 percent.
B: 76.9 percent.
C: 75.0 percent.

57 (8430): What is the ratio of 10 feet to 30 inches?

A: 4:1

B: 1:3
C: 3:1

58 (8431): How much current does a 30-volt, 1/2 horsepower motor that is 85 percent efficient draw from the bus? (Note: 1 horsepower = 746 watts)

A: 14.6 amperes.
B: 12.4 amperes.
C: 14.3 amperes.

59 (8432): Solve the equation. $[(4 \times -3) + (-9 \times 2)] \div 2 =$

A: -30
B: -15
C: -5

60 (8433): Solve the equation. $(64 \times 3/8) \div 3/4 =$

A: 18
B: 24
C: 32

61 (8434): Solve the equation. $(32 \times 3/8) \div 1/6 =$

A: 12
B: 2
C: 72

62 (8435): What is the ratio of a gasoline fuel load of 200 gallons to one of 1,680 pounds? Hint: 1 gallon weighs 6 pounds. This information is not given on the test.

A: 5:7
B: 2:3
C: 5:42

63 (8436): Solve the equation. $1/2 (-30 + 34) 5$

A: 10.
B: 95.
C: 160.

64 (8437): (Refer to Figure 58.)
Solve the equation.

A: 174.85.
B: 68.037.
C: 14.002.

$$\frac{(-35 + 25) (-7) + (\pi) (16^{-2})}{\sqrt{25}} =$$

FIGURE 58.—Equation.

65 (8438): (Refer to Figure 59.)
Solve the equation.

Hint: These are not square root symbols. It is division.

A: +31.25.
B: -5.20.
C: -31.25.

$$\frac{-4\sqrt{125}}{-6\sqrt{-36}} =$$

FIGURE 59.—Equation.

66 (8439): Solve the equation. $4 - 3[-6(2 + 3) + 4] =$

A: 82
B: -25
C: -71

67 (8440): Solve the equation. $-6[-9(-8 + 4) - 2(7 + 3)] =$

A: -332
B: 216

C: -96

68 (8441): Solve the equation. $|(-3 + 2)(-12 - 4) + (-4 + 6) \times 3$

A: 20

B: 22

C: 28

69 (8442): (Refer to Figure 60.) Solve the equation.

A: 11.9.

B: 11.7.

C: 11.09.

$$\frac{(-5 + 23) (-2) + (3^{-3}) (\sqrt{64})}{-27 \div 9} =$$

Future Question:

$4 - (-2) + 12 \div 2 \times 3 =$

A) 24

B) 36

B) 27

FIGURE 60.—Equation.

MASTER KEY

#	Q	A	B	C	#	Q	A	B	C	#	Q	A	B	C	#	Q	A	B	C
1	8379			C	19	8394		B		37	8410			C	55	8428		B	
2	8380	A			20	8394.1		B		38	8411			C	56	8429	A		
3	8381			C	21	8395	A			39	8412			C	57	8430	A		
4	8382			C	22	8395.1			C	40	8413			C	58	8431	A		
5	8383			C	23	8396			C	41	8414	A			59	8432		B	
6	8383.1	A			24	8397		B		42	8415	A			60	8433			C
7	8384			C	25	8398	A			43	8416	A			61	8434			C
8	8385	A			26	8399	A			44	8417			C	62	8435	A		
9	8386	A			27	8400		B		45	8418			C	63	8436	A		
10	8387			C	28	8401			C	46	8419			C	64	8437			C
11	8388	A			29	8402		B		47	8420			C	65	8438		B	
12	8389			C	30	8403		B		48	8421		B		66	8439	A		
13	8390			C	31	8404		B		49	8422			C	67	8440			C
14	8391			C	32	8405		B		50	8423		B		68	8441		B	
15	8392	A			33	8406	A			51	8424			C	69	8442	A		
16	8393			C	34	8407			C	52	8425	A							
17	8393.1	A			35	8408		B		53	8426		B						
18	8393.2	A			36	8409		B		54	8427	A							