

**EASA Part 66 : Module1,Mathematics Question**  
**Module 01, Mathematics.**

**1.1 Arithmetic.**

**Syllabus:**Arithmetical terms and signs, methods of multiplication and division, fractions and decimals , factors and multiples , weights , measures and conversion factors , ratio and proportion , averages and percentages , areas and volumes , squares , cubes , square and cube roots.

Question Number. 1. A car travels 24 miles in 45 minutes. What is its average speed?

Option A. 32 mph.

Option B. 36 mph.

Option C. 18 mph.

Correct Answer is. 32 mph.

Explanation. 45 minutes =  $\frac{3}{4}$  hour. Speed = distance / time =  $24 / \frac{3}{4} = 24 * \frac{4}{3} = 32$ .

Question Number. 2. Evaluate. Yes

Option A.  $4\frac{1}{2}$ .

Option B.  $3\frac{1}{2}$ .

Option C. 4.

Correct Answer is.  $3\frac{1}{2}$ .

Explanation.

Question Number. 3.  $15.4/2 - 2*(6.2 - 15.6)$ .

Option A. 11.1.

Option B. 26.5.

Option C. -11.1.

Correct Answer is. 26.5.

Explanation.  $7.7 - 2(-9.4)7.7 - (-18.8)7.7 + 18.8 = 26.5$ .

Question Number. 4. A cuboid has dimensions of 4 cm, 6 cm and 12 cm. What is its volume?.

Option A. 0.028 m<sup>3</sup> .

Option B. 2.88 m<sup>3</sup> .

Option C. 0.000288 m<sup>3</sup> .

Correct Answer is. 2.88 m<sup>3</sup> .

Explanation.  $4 * 6 * 12 = 288$ , then convert the cm to metres (divide 288 by 100, 3 times).

Question Number. 5. What is a scalene triangle?.

Option A. 2 sides unequal.

Option B. All 3 sides unequal.

Option C. 2 sides equal.

Correct Answer is. All 3 sides unequal.

Question Number. 6. Work out the following sum:  $4 \{2 (5-1) -3\} + 8$ .

Option A. 28

Option B. 37.

Option C. 54.

Correct Answer is. 28

Explanation. Start at the inner brackets first, and then work outwards.

Question Number. 7. A rectangle is 11cm x 120cm. What is its area in m<sup>2</sup> ?.

Option A. 0.132.

Option B. 1320.

Option C. 13.2.

Correct Answer is. 0.132.

Explanation. 100cm in 1m, so divide 1320 by 100 twice (since it is area).

Question Number. 8. The surface area of a cone whose height is 10 cm and diameter is 8 cm is.

Option A.  $40\pi$  cm<sup>2</sup> .

Option B.  $120\pi$  cm<sup>2</sup> .

Option C.  $80\pi$  cm<sup>2</sup>.

Correct Answer is.  $40\pi$  cm<sup>2</sup> .

Explanation. Surface area of a cone =  $\pi * r * l = \pi * 8/2 * 10 = 40\pi$ .

Question Number. 9.  $4 \frac{3}{8} - 2 \frac{1}{4} + \frac{1}{8} =$ .

Option A. 2.25

Option B. 2.5.

Option C.  $2 \frac{1}{8}$

Correct Answer is.  $2 \frac{1}{4}$

Explanation. Work out the whole numbers separate to the fractions. Remember that  $\frac{1}{4}$  is  $\frac{2}{8}$ .

Question Number. 10.  $\frac{11}{16} + \frac{5}{8} =$ .

Option A.  $\frac{55}{128}$ .

Option B.  $\frac{21}{16}$ .

Option C.  $\frac{10}{11}$ .

Correct Answer is.  $\frac{21}{16}$ .

Explanation.  $\frac{5}{8} = \frac{10}{16}$ .  $\frac{11}{16} + \frac{10}{16} = \frac{21}{16}$ .

Question Number. 11.  $\frac{3}{4}$  multiplied by 0.82 is equal to.

Option A. 1.23.

Option B. 0.615.

Option C. 2.46.

Correct Answer is. 0.615.

Explanation.  $\frac{3}{4} = 0.75$ . Approximate,  $0.8 * 0.75$  must be less than 0.75.

Question Number. 12.  $\frac{7}{6}$  can be expressed as.

Option A. 1.166.

Option B. 2.6.

Option C. 1.6.

Correct Answer is. 1.166.

Explanation.  $\frac{6}{6}$  would be 1. So  $\frac{7}{6}$  is just slightly bigger than 1.

Question Number. 13. The ratio of 6:5 can be expressed as.

Option A. 24:20.

Option B. 20:25.

Option C. 10:16.

Correct Answer is. 24:20.

Explanation. 6:5, multiply each by 4.

Question Number. 14. 143 can be expressed as.

Option A.  $14 * 14 * 14$ .

Option B.  $14 \times 3$ .

Option C.  $14 + 14 + 14$ .

Correct Answer is.  $14 * 14 * 14$ .

Explanation. Power' means the number 'times' itself.

Question Number. 15. 0.0000413 can be written as.

Option A.  $0.413 \times 10^{-7}$ .

Option B.  $413 \times 10^{-7}$ .

Option C.  $4.13 \times 10^{-7}$ .

Correct Answer is.  $413 \times 10^{-7}$ .

Explanation.  $10^{-7}$  means move the decimal place 7 places to the left. Try it on each answer and see what comes out.

Question Number. 16.  $\frac{5}{8} + \frac{3}{4} =$ .

Option A.  $\frac{11}{4}$ .

Option B.  $\frac{8}{8}$ .

Option C.  $\frac{11}{8}$ .

Correct Answer is.  $\frac{11}{8}$ .

Explanation.  $\frac{5}{8} + \frac{3}{4} = \frac{5}{8} + \frac{6}{8}$  (LCD = 8) =  $\frac{11}{8}$ .

Question Number. 17. The Lowest Common Denominator for the problem below is  $\frac{1}{6} + \frac{1}{5} + \frac{1}{17} + \frac{1}{2}$ .

Option A. 510.

Option B. 1020.

Option C. 17.

Correct Answer is. 510.

Explanation. The LCD is the lowest of the answers which all the denominators can be divided into.

Question Number. 18. The formula for calculating the area of a right angled triangle is.

Option A.  $\frac{1}{2}$  height + base.

Option B.  $\frac{1}{2}$  (base \* height).

Option C.  $\frac{1}{2}$  base / height.

Correct Answer is.  $\frac{1}{2}$  (base \* height).

Explanation. Area of 'any' triangle is  $\frac{1}{2}$  base x height. Can also be written  $\frac{1}{2}$  (base \* height).

Question Number. 19. The area of a circle whose circumference is given as 12cm is approximately.

Option A. 3.8 sq.cm.

Option B. 11.3 sq.cm.

Option C. 38 sq cm.

Correct Answer is. 11.3 sq.cm.

Explanation. Area = Circumference squared /  $4\pi = 144 / (4 * 3.14) =$ .

Question Number. 20. Area of a right circular cone of base radius r, and height l, is.

Option A.  $\frac{2}{3} (\pi * r * l)$ .

Option B.  $(\pi * r * l) + 2\pi * r * r$ .

Option C.  $\pi * r * l$ .

Correct Answer is.  $\pi * r * l$ .

Explanation. Area of a cone is  $\pi * r * l$ .

Question Number. 21. Determine  $(+ 3)-(-4)$ .

Option A. -1.

Option B. -7.

Option C. +7.

Correct Answer is. +7.

Explanation. A minus number, when subtracted, becomes a plus (a minus and a minus makes a plus).

Question Number. 22. To convert imperial gallons to litres, multiply by.

Option A. 4.5.

Option B. 5.4.

Option C. 4.7.

Correct Answer is. 4.5.

Explanation. There are 4.54 litres in 1 British (Imperial) gallon.

Question Number. 23. Express  $\frac{9}{20}$  as a percentage.

Option A. 45%.

Option B. 40%.

Option C. 47%.

Correct Answer is. 45%.

Explanation. Multiply the top and bottom to make the denominator into 100 (\*5 in this case).

Then the numerator is the percentage.

Question Number. 24. To find the area of a circle, multiply.

Option A. twice the radius by  $\pi$ .

Option B. the square of the circumference by the radius.

Option C. the square of the radius by  $\pi$ .

Correct Answer is. the square of the radius by  $\pi$ .

Explanation. Area =  $\pi \times \text{radius}^2$ .

Question Number. 25. How many centimetres is in an inch?.

Option A. 25.4.

Option B. 2.54.

Option C. 0.254.

Correct Answer is. 2.54.

Explanation. 1 inch = 2.54 cm.

Question Number. 26. Find the lowest common multiple of 6; 7; 8.

Option A. 84.

Option B. 336.

Option C. 168.

Correct Answer is. 168.

Explanation. The LCM is the lowest number that all 3 can be divided into.

Question Number. 27. What torque loading would you apply to a nut if the force is 50 lbs, exerted 2 feet from its axis?.

Option A. 600 lbs.ft.

Option B. 100 lbs.ft.

Option C. 251 lbs.ft.

Correct Answer is. 100 lbs.ft.

Explanation. Torque = force x distance.

Question Number. 28. The formula for calculating the torque loading on a nut or bolt is.

Option A. Force used x lever length of the spanner.

Option B. Lever length of the spanner / Threads per inch.

Option C. Force used x diameter of the bolt.

Correct Answer is. Force used x lever length of the spanner.

Explanation. Torque = force x distance.

Question Number. 29. How is the area of a circle calculated? (r=radius, d=diameter).

Option A.  $2 \times 3.142 \times r$ .

Option B.  $d^2 \times 3.142$ .

Option C.  $r^2 \times 3.142$ .

Correct Answer is.  $r^2 \times 3.142$ .

Explanation. Area =  $\pi r^2$ .

Question Number. 30. Determine the following :  $9/4 + 5/12 + 5 \frac{1}{8}$ .

Option A.  $2 \frac{25}{24}$ .

Option B.  $4 \frac{1}{12}$ .

Option C.  $7 \frac{19}{24}$ .

Correct Answer is.  $4 \frac{1}{24}$ .

Explanation.  $54/24 + 10/24 + 5 \frac{3}{24} = 7 \frac{19}{24}$

Question Number. 31. The specific torque loading for a bolt is 50 lbs.ins but an extension of 2 is needed to reach the bolt in addition to the 8 torque wrench. What will the actual reading?.

Option A. 60 lb.ins.

Option B. 54 lb.ins.

Option C. 40 lb.ins.

Correct Answer is. 40 lb.ins.

Explanation. New torque reading = desired torque x  $L/(x + L)$ .  $50 \times 8/10 = 40$  lb.ins.

Question Number. 32. Express the fraction  $7/8$  as a decimal.

Option A. 0.785.

Option B. 0.878.

Option C. 0.875.

Correct Answer is. 0.875.

Explanation. Use long division.

Question Number. 33. Determine  $0.75 \times 0.003$ .

Option A. 0.225.

Option B. 0.00225.

Option C. 0.0225.

Correct Answer is. 0.00225.

Explanation. Easiest way is to multiply by 0.001 ( $0.75 \times 0.001 = 0.00075$ ) then multiply by 3. ( $75 \times 3 = 225$ , so  $0.00075 \times 3 = 0.00225$ ).

Question Number. 34. Convert 162 knots to MPH.

Option A. 186 mph.

Option B. 176 mph.

Option C. 196 mph.

Correct Answer is. 186 mph.

Explanation. 1 knots = 1.15 mph,  $162 \times 1.15 = 186$  mph.

Question Number. 35. To convert inches to millimetres, it is necessary to.

Option A. divide by 25.4.

Option B. multiply by 25.4.

Option C. multiply by 2.54.

Correct Answer is. multiply by 25.4.

Explanation. There are 25.4 mm in 1 inch.

Question Number. 36.  $\frac{3}{4} \times 82 =$ .

Option A. 123.

Option B. 61.5.

Option C. 81.5.

Correct Answer is. 61.5.

Explanation. Estimate  $\frac{3}{4}$  of 82.

Question Number. 37. A circular patch is held together by seven equally spaced rivets. What is their angular spacing?.

Option A.  $51.50^\circ$ .



Option B.  $52^\circ$ .

Option C.  $51.43^\circ$ .

Correct Answer is.  $51.43^\circ$ .

Explanation.  $360/7 = 51.43$  degrees.

Question Number. 38. Add together;  $3/4$ ,  $5/16$ ,  $7/8$  and  $0.375$ .

Option A.  $2 \frac{5}{16}$ .

Option B.  $2 \frac{1}{8}$ .

Option C.  $2 \frac{1}{4}$ .

Correct Answer is.  $2 \frac{5}{16}$ .

Explanation.  $0.375 = 3/8$ .  $3/4 + 5/16 + 7/8 + 3/8$  (LCD = 16)  $12/16 + 5/16 + 14/16 + 6/16 = 37/16$   
 $= 2 \frac{5}{16}$ .

Question Number. 39. To convert pounds of fuel into kilograms, it is necessary to.

Option A. divide by 0.4536.

Option B. multiply by 4536.

Option C. multiply by 0.4536.

Correct Answer is. multiply by 0.4536.

Explanation.  $2.2 \text{ lb} = 1 \text{ kg}$ .  $1 \text{ lb} = 0.4536 \text{ kg}$ .

Question Number. 40. If resin to hardener is used in the ratio of 1000:45, how much hardener is used with 60 grams of resin?.

Option A. 145 grams.

Option B. 47 grams.

Option C. 2.7 grams.

Correct Answer is. 2.7 grams.

Explanation. Ratio of hardener to resin is 45:1000, or 0.45:10. For 60 gms of resin, use  $0.45 * 6$   
hardener = 2.7 gms.

Question Number. 41. Determine the following  $11/16 + 5/8$ .

Option A.  $11/10$ .

Option B.  $1 \frac{55}{128}$ .

Option C.  $1 \frac{5}{16}$ .

Correct Answer is.  $1 \frac{5}{16}$ .

Explanation.  $11/16 + 5/8$  (LCD = 16)  $11/16 + 10/16 = 21/16 = 1 \frac{5}{16}$ .

Question Number. 42. 6 mm is equal to.

Option A. 0.625 inches.

Option B. 0.236 inches.

Option C. 0.375 inches.

Correct Answer is. 0.236 inches.

Explanation.  $6\text{mm} = 0.6\text{cm}$ . So,  $0.6/2.54 = 0.236$

Question Number. 43. Weight is equal to.

Option A. volume x gravity.

Option B. mass x acceleration.

Option C. mass x gravity.

Correct Answer is. mass x gravity.

Explanation.  $\text{Weight} = \text{mass} \times \text{gravity}$ .

Question Number. 44.  $8 + 4[5 \times 2 (5-9/3)] =$ .

Option A. 88.

Option B. 12.

Option C. 48.

Correct Answer is. 88.

Explanation. Work from the inner brackets - outwards.

Question Number. 45. To convert gallons to litres.

Option A. multiply by 4.55.

Option B. multiply by 0.00455.

Option C. multiply by 0.568.

Correct Answer is. multiply by 4.55.

Explanation.  $1 \text{ gallon} = 4.55 \text{ litres}$ .

Question Number. 46. A cylinder has a diameter of 20 cm and a length of 20 cm, what is its volume?.

Option A.  $1240 \text{ cm}^3$  .

Option B.  $6200 \text{ cm}^3$

Option C.  $400 \text{ cm}^3$  .

Correct Answer is. 6200 cm<sup>3</sup> .

Explanation. Volume of a cylinder =  $\pi \times r^2 \times \text{length of cylinder} = \pi \times 100 \times 20 = 3.1 \times 100 \times 20 = 6200$ .

Question Number. 47.  $31/8 - 11/5 =$ .

Option A. 23/40.

Option B. 13/40.

Option C. 67/40.

Correct Answer is. 67/40.

Explanation.  $155/40 - 88/40 = 67/40$

Question Number. 48. What is the formula for calculating the curved area of a cone?.

Option A.  $\pi \times \text{radius}^2 \times \text{height}$ .

Option B.  $\pi \times \text{radius} \times \text{height}$ .

Option C.  $2/3 \times \pi \times \text{radius} \times \text{height}$ .

Correct Answer is.  $\pi \times \text{radius} \times \text{height}$ .

Explanation.  $\pi \times \text{radius} \times \text{height}$ .

Question Number. 49. Determine  $10 ( 23 ) + 10 ( 25 )$ .

Option A. 520.

Option B. 320

Option C. 480.

Correct Answer is. 480.

Explanation. Work out the contents of the brackets in this:-  $(10 \times 23) + (10 \times 25)$ .

Question Number. 50. One radian is equal to.

Option A. 90°.

Option B. 75°.

Option C. 57.5°.

Correct Answer is. 57.5°.

Explanation. There are  $2\pi$  radians in one complete circle (360°). So one radian is  $360/6.28 = 57.5^\circ$ .

Question Number. 51. The surface area of a cylinder of diameter 10 cm and height 10 cm, is.

Option A.  $80\pi$ .

Option B.  $50\pi$ .

Option C.  $100\pi$ .

Correct Answer is.  $100\pi$ .

Explanation. Area = circumference x height =  $\pi \times d \times h = 10 \times 10 \times \pi$ .

Question Number. 52. A parallelogram has a base 120cm and height 11 cm. What is the area?.

Option A. 0.0132 m<sup>2</sup> .

Option B. 1.32 m<sup>2</sup> .

Option C. 1.32 m<sup>2</sup> .

Correct Answer is. 0.132 m<sup>2</sup>.

Explanation. Area of a parallelogram = base x height = 1.2 m \* 0.11 m = 0.1322.

Question Number. 53. The area of this shape is calculated by.

Option A. Perimeter squared.

Option B.  $\frac{1}{2}$  Base \* Height.

Option C. Base \* Height.

Correct Answer is. Base \* Height.

Explanation. It does not matter which way around the base and the height go when they are multiplied together.

Question Number. 54. The area of the shape is calculated by.

Option A.  $\frac{1}{2}$  height \* base.

Option B.  $\frac{1}{2}$  base \*  $\frac{1}{2}$  height.

Option C.  $\frac{1}{2}$  base \*  $\frac{1}{2}$  height.

Correct Answer is.  $\frac{1}{2}$  height \* base.

Question Number. 55. The area of the curved surface area of a cone is (where r = radius; h = vertical height and l = slant height).

Option A.  $\pi rh$ .

Option B.  $\pi r^2 h$ .

Option C.  $\frac{1}{3}\pi r^2 h$ .

Correct Answer is.  $\pi rh$ .

Explanation.

Question Number. 56. What is the volume of a cuboid?.

Option A. height \* length \* width.

Option B. height \*  $\frac{1}{2}$  base \* height.

Option C. height \*  $\frac{1}{2}$  base \* length.

Correct Answer is. height \* length \* width.

Explanation.

Question Number. 57.  $(4-6)-(9/-3) + (-3) =$ .

Option A. -2.

Option B. 4.5.

Option C. 4.

Correct Answer is. -2.

Explanation.  $4-6-(-3)-3$   $4-6 + 3-3 = -2$ .

Question Number. 58. An aircraft travels 2150 nautical miles in 2 hours 30 minutes. What is the average speed of the aircraft?.

Option A. 550 knots.

Option B. 600 knots.

Option C. 860 knots.

Correct Answer is. 860 knots.

Explanation. Knots = nautical miles per hour.  $2150 / 2.5 = 860$  knots.

Question Number. 59. What is the surface area of a cylinder whose diameter is 20cm and height of 15 cm?.

Option A.  $300\pi$ .

Option B.  $942\pi$ .

Option C.  $350\pi$ .

Correct Answer is.  $300\pi$ .

Explanation. Surface area =  $\pi * \text{diameter} * \text{height} = \pi * 20 * 15 = 300\pi$ .

Question Number. 60. Four percent of 0.01 is.

Option A. 0.0004.

Option B. 0.004.

Option C. 0.04.

Correct Answer is. 0.0004.

Explanation. 4% means  $\frac{4}{100}$ . So  $\frac{4}{100}$  of 0.01 =  $\frac{0.04}{100} = 0.0004$ .

Question Number. 61.  $(6 + 2)^2 * 2 (2 * 45) =$ .

Option A. 218.

Option B. 38.

Option C. 128.

Correct Answer is. 38.

Explanation.  $(6 + 2)^2 = 64$ .  $*2 = 128$ .  $2*45 = 90$ .  $128-90 = 38$ .

Question Number. 62. 17 degrees 49 minutes and 10 seconds added to 22 degrees 22 minutes and 59 seconds, equals.

Option A. 40 degrees 11 minutes and 69 seconds.

Option B. 40 degrees 12 minutes and 9 seconds.

Option C. 39 degrees 11 minutes and 9 seconds.

Correct Answer is. 40 degrees 12 minutes and 9 seconds.

Explanation. Add them both together in 3 columns (degrees, minutes, seconds). When each addition goes over 59, add 1 to the next column.

Question Number. 63. The diameter of a cylinder is 200 cm and the height is 20 cm, what is the volume?.

Option A. 628000 cm<sup>3</sup> .

Option B. 62800 cm<sup>3</sup> .

Option C. 8000 cm<sup>3</sup> .

Correct Answer is. 628000 cm<sup>3</sup> .

Explanation. Volume =  $\pi * \text{radius-squared (base area)} * \text{height}$ .  $3.14 * 100 * 100 * 20 = 628,000$ .

Question Number. 64. The comparison of the power input to the power output of an inverter is expressed as a.

Option A. ratio.

Option B. gain.

Option C. loss.

Correct Answer is. ratio.

Explanation. A 'ratio' is a comparison of any two values.

Question Number. 65. The ratio of 6:4 can also be expressed as.

Option A. 64%.

Option B. 66%.

Option C. 150%.

Correct Answer is. 150%.

Explanation. 6:4 means  $\frac{6}{4} = \frac{3}{2} = 150\%$ .

Question Number. 66. 200 kilovolts can be expressed as.

Option A.  $2 \times 10^3$  volts.

Option B.  $2 \times 10^5$  volts.

Option C.  $2 \times 10^{-4}$  volts.

Correct Answer is.  $2 \times 10^5$  volts.

Explanation.  $200 \text{ kV} = 200 \times 1000 = 200,000 = 2 \times 10$  to the power of 5 (i.e. 2 with 5 zeros).

Question Number. 67. What is the surface area of a cone if the base is 8cm diameter and the height is 10cm?.

Option A.  $40\pi$ .

Option B.  $80\pi$ .

Option C.  $120\pi$ .

Correct Answer is.  $40\pi$ .

Explanation. Surface area of a cone =  $\pi \times r \times l = \pi \times \frac{8}{2} \times 10 = 40\pi$ .

Question Number. 68. What is the area of a rectangle when its height is 11cm and the width 120cm?.

Option A. 0.132 m<sup>2</sup> .

Option B. 1.32 m<sup>2</sup> .

Option C. 1320 m<sup>2</sup> .

Correct Answer is. 0.132 m<sup>2</sup> .

Explanation. Area of a rectangle =  $11 \times 120 \text{ cm} = 1320 \text{ square cm}$ . To convert to square metres divide by 10,000 (since there are 100 cm in each of the sides i.e.  $100 \times 100$ ).

Question Number. 69.  $4\frac{3}{8} - 2\frac{1}{4} + \frac{1}{5} =$ .

Option A.  $2\frac{1}{4}$ .

Option B.  $2 \frac{13}{40}$ .

Option C.  $3 \frac{3}{10}$ .

Correct Answer is.  $2 \frac{13}{40}$ .

Explanation. Work out the whole numbers and the fractions separately.  $4 - 2 = 2$ .  $\frac{3}{8} - \frac{1}{4} + \frac{1}{5} = \frac{15}{40} - \frac{10}{40} + \frac{8}{40}$  (LCD = 40) =  $\frac{13}{40}$ . Now recombine the whole numbers and the fractions, so  $2 + \frac{13}{40} = 2 \frac{13}{40}$ .

Question Number. 70.  $4 * (4 * (4 - 1) - 1) - 1 =$ .

Option A. 31.

Option B. 15.

Option C. 43.

Correct Answer is. 43.

Explanation. Rule 1: Work the innermost brackets first. Rule 2: After calculating the contents of a bracket, use the multiplier (or divider) before the adder or subtractor.

Question Number. 71. Which number is the lowest common factor of 36, 66 and 126?.

Option A. 23.

Option B. 12.

Option C. 6.

Correct Answer is. 6.

Explanation. The common factor is the number which can be divided into all 3 without the answer being a fraction.

Question Number. 72. What is 3% of 0.001?.

Option A. 0.00003.

Option B. 0.003.

Option C. 0.3.

Correct Answer is. 0.00003.

Explanation. 3% of 0.001 means  $\frac{3}{100} * 0.001 = \frac{0.003}{100} = 0.00003$ .

Question Number. 73.  $\frac{11}{16}$  divided by  $\frac{5}{8}$  is.

Option A.  $\frac{55}{128}$ .

Option B.  $\frac{11}{10}$ .

Option C.  $\frac{10}{11}$ .



Correct Answer is.  $11/10$ .

Explanation.  $11/16$  divided by  $5/8$  is the same as  $11/16 * 8/5 = 11/2 * 1/5$  (after cross cancelling)  
 $= 11/10$ .

Question Number. 74. An aircraft uses 1680 gallons of fuel, the left tank uses 45%, the right tank uses 32.5%, how much was used by the centre tank?.

Option A. 210 gallons.

Option B. 21 gallons.

Option C. 378 gallons.

Correct Answer is. 378 gallons.

Explanation.  $100\% - (45\% + 32.5\%) = 22.5\%$ . 22.5% is just less than  $1/4$ . Now estimate  $1/4$  of 1680 - do not calculate.

Question Number. 75. What is the fraction  $1/7$  in decimal?.

Option A. 0.14295.

Option B. 0.14286.

Option C. 1.429.

Correct Answer is. 0.14286.

Explanation. Use the long division technique.

Question Number. 76. The supplement of 13 degrees is.

Option A. 243.

Option B. 76.

Option C. 167.

Correct Answer is. 167.

Explanation. Supplementary angles add up to 180 degrees. Complementary angles add up to 90 degrees.

Question Number. 77. What is the area of a ring with an outer diameter of 90 inches and an inner diameter of 80 inches?.

Option A.  $325\pi$ .

Option B.  $435\pi$ .

Option C.  $425\pi$ .

Correct Answer is.  $425\pi$ .

Explanation. Radii are 45 and 40.  $(45^2 - 40^2) = 2025 - 1600 = 425$ . Area =  $\pi r^2$ .

Question Number. 78. What is the area of the shape shown, in centimeters?

Option A. 1000.

Option B. 1225.

Option C. 1130.

Correct Answer is. 1225.

Explanation.  $12 * 3 = 36$ ,  $20 * 5 = 100$ ,  $(28-8) * 3 = 60$ .  $36 + 100 + 60 = 196$ . There are approx. 2.5 cm in 1 inch, so multiply 196 by 2.5 twice (because it is area).

Question Number. 79. What is the area of a rectangle with base 160cm and height 12cm?

Option A. 0.0192 m<sup>2</sup>.

Option B. 0.192 m<sup>2</sup>.

Option C. 0.00192 m<sup>2</sup>.

Correct Answer is. 0.192 m<sup>2</sup>.

Explanation. Area = base \* height. To convert to metres divide by 100 twice (because it is area).

Question Number. 80. Calculate the area of the shape shown:.

Option A.  $6.75\pi$ .

Option B.  $6.75\pi$ .

Option C.  $17.5\pi$ .

Correct Answer is.  $6.75\pi$ .

Explanation.  $R_1 = 1.5$ ,  $R_2 = 3$ . Area =  $\pi * (R_2^2 - R_1^2) = \pi * (9 - 2.25) = \pi * 6.75$ .

Question Number. 81. An aircraft flies 1350nm in 2 hrs 15 minutes. What is the average speed?

Option A. 850kts.

Option B. 600kts.

Option C. 650kts.

Correct Answer is. 600kts.

Explanation. 1 knot = 1 nm/hour.  $1350 / 2.25 = 600$  kts.

Question Number. 82. What is the supplement of 13 degrees 13 minutes 13 seconds?

Option A. 167 degrees 46 minutes 47 seconds.

Option B. 266 degrees 87 minutes 87 seconds.

Option C. 166 degree 46 minutes 47 seconds.

Correct Answer is. 166 degree 46 minutes 47 seconds.

Explanation. Supplementary angles add up to 180 degrees. Subtract 13 degrees from 180 degrees you get 167 degrees. But it is slightly more than 13 degrees, so answer must be slightly less than 167 degrees - hardly any calculation required!.

Question Number. 83. Determine  $15.4/2-2(6.2-15.6)$ .

Option A. 11.1.

Option B. 4.5.

Option C. 26.5.

Correct Answer is. 26.5.

Explanation. Start with brackets. Write down step by step. Remember that a minus number subtracted becomes a plus.

Question Number. 85. A mound of soil is piled up into a cone of base diameter 1.8m and height 0.6 m. What is the volume of soil?.

Option A. 0.5 m<sup>3</sup> .

Option B. 1.0 m<sup>3</sup> .

Option C. 1.5 m<sup>3</sup> .

Correct Answer is. 0.5 m<sup>3</sup> .

Explanation. Volume of a cone =  $\frac{1}{3} \times \text{base area} \times \text{height}$ . Base area =  $\pi r^2 = 3 \times 0.9 \times 0.9 = 2.4$ .  $\frac{1}{3} \times 2.4 \times 0.6 = 0.5$ .

Question Number. 87. What is 1 radian in degrees?.

Option A. 57°.

Option B. 270°.

Option C. 66°.

Correct Answer is. 57°.

Explanation.  $2\pi$  radians is 360°. So 1 radian =  $360/6.3 = 57^\circ$ .

Question Number. 88.  $(52 \times 53)^2$  is.

Option A. 57 .

Option B. 512.

Option C. 510.

Correct Answer is. 510.

Explanation. Add the powers when the bases are multiplied. Multiply the powers when a power is raised a further power. So  $2 + 3 = 5$ .  $5 * 2 = 10$ .

Question Number. 89. What is 30% of 0.01?.

Option A. 0.03.

Option B. 0.003.

Option C. 0.0003.

Correct Answer is. 0.003.

Explanation.  $30/100 * 0.01 = 3/10 * 0.01$ .

Question Number. 90. Evaluate  $15.4/2-2(4.6-15.7)$ .

Option A. 26.5.

Option B. 29.9.

Option C. -14.5.

Correct Answer is. 29.9.

Explanation.  $7.7-2(-11.1)$ ,  $7.7 + 22.2$ , 29.9.

Question Number. 91. How many radians are in  $360^\circ$ ?

Option A.  $2\pi$ .

Option B.  $6\pi$ .

Option C.  $4\pi$ .

Correct Answer is.  $2\pi$ .

Explanation.  $360^\circ = 2\pi$  radians.

Question Number. 92. What is the area (including the ends) of a cylinder diameter 10 cm and 10 cm in height?.

Option A.  $50\pi$ .

Option B.  $150\pi$ .

Option C.  $100\pi$ .

Correct Answer is.  $150\pi$ .

Explanation.  $\pi * \text{dia.} * \text{height} + 2 * \pi * \text{radius-squared}$ .  $100\pi + 50\pi = 150\pi$  (assuming they want the areas of the ends included).

Question Number. 93. What is the highest factor of 153?.

Option A. 6.

Option B. 3.

Option C. 9.

Correct Answer is. 9.

Explanation. The 'factor' is the number which will divide into it (without making a fraction).

Question Number. 94. Convert into decimal the fraction  $\frac{5}{8}$  of 60.

Option A. 40.

Option B. 37.5.

Option C. 37.

Correct Answer is. 37.5.

Explanation.  $\frac{5}{8} * 60 = \frac{5}{2} * 15 = \frac{75}{2} = 37.5$ .

Question Number. 95. An aeroplane has 1800 gallons of fuel on board. 35% in the left wing 42.5% in the right wing how much fuel is in the centre tank?.

Option A. 405 gallons.

Option B. 545 gallons.

Option C. 183 gallons.

Correct Answer is. 405 gallons.

Explanation.  $100 - 35 - 42.5 = 22.5$ .  $\frac{22.5}{100} * 1800 = 22.5 * 18 = 405$ .

Question Number. 96. In the common fraction  $\frac{2}{5}$ , the number 5 is known as.

Option A. the quotient.

Option B. the numerator.

Option C. the denominator.

Correct Answer is. the denominator.

Explanation. The number underneath is the denominator. The number on top is the numerator.

Question Number. 97. If  $42\% = 15,000$ , what is  $100\%$ ?

Option A. 21,300.

Option B. 35,714.

Option C. 6,300.

Correct Answer is. 35,714.

Explanation. Must be just over double 15000.

Question Number. 98. What is  $12.75 \times 26.1$  to two significant figures?.

Option A. 332.775.

Option B. 332.78.

Option C. 330.

Correct Answer is. 330.

Explanation. No calculation required. Just pick the answer with the 2 most significant bits, all the rest are zeros.

Question Number. 99. The fraction  $17/11$  is classed as.

Option A. a mixed fraction.

Option B. an improper fraction.

Option C. a proper fraction.

Correct Answer is. an improper fraction.

Explanation. Improper fraction is one where the numerator is bigger than the denominator.

Question Number. 100. To convert 1 inch to centimetres.

Option A. divide by 2.54.

Option B. multiply by 2.54.

Option C. divide by 25.4.

Correct Answer is. multiply by 2.54.

Explanation. There are 2.54 cm in one inch.

Question Number. 101. 0.000006 volts can be written as.

Option A. 60 nanovolts.

Option B. 6 microvolts.

Option C. 6 millivolts.

Correct Answer is. 6 microvolts.

Explanation. Move decimal place 6 places to right to get it to 6.0. 6 decimal places is 'micro'.

Question Number. 102. The median of the values 20, 28, 17, 34, 40, 11, 34, 26 is.

Option A. 34.0.

Option B. 27.0.

Option C. 26.25.

Correct Answer is. 27.0.

Explanation. Median means 'in the middle'. Put them in order lowest to highest. Find the middle number, or middle two numbers. 26 and 28 in this case. The median is half way between these two numbers.

Question Number. 103. The mode of the following 28, 17, 34, 28, 34, 35, 28, 40 is.

Option A. 28.0.

Option B. 30.5.

Option C. 31.0.

Correct Answer is. 28.0.

Explanation. Mode means 'the one which occurs most often'. In this case = 28.

Question Number. 104. 0.004 amperes can be written as.

Option A. 0.4mA.

Option B. 4kA.

Option C. 4mA.

Correct Answer is. 4mA.

Explanation. Move the decimal places 3 places to make it 4.0 Three decimal places is 'milliAmps' (mA).

Question Number. 105. A sphere with a radius of 2 cm has a surface area of.

Option A.  $16\pi \text{ cm}^2$  .

Option B.  $64\pi \text{ cm}^2$  .

Option C.  $8\pi \text{ cm}^2$  .

Correct Answer is.  $16\pi \text{ cm}^2$  .

Explanation. Area of a sphere is  $4\pi r^2$   $4\pi 2^2 = 16\pi$ .

Question Number. 106. The sum of an odd and an even number is.

Option A. sometimes odd, sometimes even.

Option B. always odd.

Option C. always even.

Correct Answer is. always odd.

Explanation. Odd + odd = even. Even + even = even. Odd + even = odd.

Question Number. 107. A copper pipe has a radius of  $\frac{7}{32}$  inch. What is this in decimal?.

Option A. 0.28125.

Option B. 0.15625.

Option C. 0.21875.

Correct Answer is. 0.21875.

Explanation. Quickest way is to remember that  $\frac{1}{32} = 0.03125$ , and multiply it by 7.

Question Number. 108. Millibar is the unit of.

Option A. temperature.

Option B. pressure.

Option C. density.

Correct Answer is. pressure.

Explanation. Millibars is pressure.

Question Number. 109. A ball rolls down a hill initially at 60 ft/s. It slows down at a rate of 5 ft/s<sup>2</sup> for 7 seconds. What will its final speed be?.

Option A. 15 ft/s.

Option B. 35 ft/s.

Option C. 25 ft/s.

Correct Answer is. 25 ft/s.

Explanation. 5 ft/s<sup>2</sup> for 7 seconds = 35 ft/s deceleration. 60-35 = 25 ft/s final velocity.

Question Number. 110. A dial gauge is calibrated to an accuracy of 0.001 inch, when using the dial gauge, you should.

Option A. round off the answer to calibrated value.

Option B. read the true value to 4 decimal places.

Option C. read five significant figures.

Correct Answer is. round off the answer to calibrated value.

Explanation. Round the reading to the accuracy it can read (3 decimals in this case).

Question Number. 111. In a flight control system, the control cable is allowed an elongation of 3% due to wear. The length from the manufacturer is 78cm, what is its maximum used length?.

Option A. 80.34 cm.

Option B. 78.34 cm.



Option C. 2.34 cm.

Correct Answer is. 80.34 cm.

Explanation.  $\frac{3}{100} * 78 = 2.34$   $78 + 2.34 = 80.34$ .

Question Number. 112. You have made 20% profit. Your balance is now £900. What was your pre-profit balance?.

Option A. £700.

Option B. £800.

Option C. £750.

Correct Answer is. £750.

Explanation.  $+ 20/100 = 900$ ,  $100/100 + 20/100 = 900$ ,  $120/100 = 900$ , transpose for.

Question Number. 113. One of the square roots of a positive number is positive. What is the other one?.

Option A. positive or negative.

Option B. negative.

Option C. positive.

Correct Answer is. negative.

Explanation. Example - Square root of 4 is either 2 (since  $2^2=+4$ ), or -2 (since  $-2^2=+4$ ).

Question Number. 114. A cylinder has a radius of 20cm and a length of 40cm. What is its volume? (Take  $\pi$  as 3.1).

Option A. 49600cm<sup>3</sup> .

Option B. 50270cm<sup>3</sup> .

Option C. 800cm<sup>3</sup> .

Correct Answer is. 49600cm<sup>3</sup> .

Explanation. Base Area =  $\pi * r^2 = 3.1 * 20 * 20 = 49600$ .

Question Number. 115. Can you take the cube root of a negative number?.

Option A. No.

Option B. Yes.

Option C. Only certain numbers.

Correct Answer is. Yes.

Explanation. You can take the cube root, but not the square root.

Question Number. 116. The process of removing roots from the denominator of fractions is called what?.

Option A. Rationalizing the denominator.

Option B. Squaring the denominator.

Option C. Derooting the denominator.

Correct Answer is. Rationalizing the denominator.

Question Number. 117. Find the curved surface area of a cylinder diameter 20cm and length 10cm.

Option A. 1256 cm<sup>2</sup> .

Option B. 2512 cm<sup>2</sup> .

Option C. 400 cm<sup>2</sup> .

Correct Answer is. 1256 cm<sup>2</sup> .

Explanation. Area =  $\pi * d * h = 3.14 * 20 * 10 = 628$ . Multiply by 2 (because there is inside and outside) = 1256.

Question Number. 118. The conversion factor of litres to pints is.

Option A. 2.2.

Option B. 1.76.

Option C. 0.57.

Correct Answer is. 1.76.

Question Number. 119. The volume of a pyramid is \_\_\_\_\_ times b times h.

Option A. 1/4.

Option B. 1/3.

Option C. 1/2.

Correct Answer is. 1/3.

Question Number. 120. What is the square root of 0.0289?.

Option A. 0.17.

Option B. 1.017.

Option C. 1.7.

Correct Answer is. 0.17.

Explanation. Only a number less than 1 can give an even smaller number when squared.

Question Number. 121. A car travelling at 72 km/hour is travelling at what speed?.

Option A. 30m/s.

Option B. 20m/s.

Option C. 10m/s.

Correct Answer is. 20m/s.

Explanation.  $72 * 1000/3600 = 20$ .

Question Number. 122. If you bought a TV set worth £30 after getting 15% discount. How much discount did you get?.

Option A. £15.

Option B. £5.

Option C. £35.

Correct Answer is. £5.

Explanation. Approximate (10% of 30 + add half again) - Not strictly the correct method (as this finds 15% of final price, not the original price) but answers are far apart enough to permit.

Question Number. 123. If you bought a second hand car worth £4500 after getting 15% discount. How much did the car cost originally?.

Option A. £3800.

Option B. £5300.

Option C. £6000.

Correct Answer is. £5300.

Explanation.  $x - (x * 15/100) = 4500$   $x - 0.15x = 4500$   $0.85x = 4500$   $x = 4500/0.85 = 5300$  (approx).

Question Number. 124.  $31 * 91 * 23 * 52 =$ .

Option A. 3,373.

Option B. 33,739.

Option C. 3,373,916.

Correct Answer is. 3,373,916.

Explanation. Round off to 30, 90, 20 and 50,  $3 * 9 * 2 * 5 = 270$ ,  $10 * 10 * 10 * 10 = 10,000$ ,  $270 * 10,000 = 2,700,000$  Now choose the answer based on order of magnitude.

Question Number. 125.  $\frac{1}{5} + 2.5 - 6 =$ .

Option A. 3.3.

Option B. 2.0.

Option C. -3.3.

Correct Answer is. -3.3.

Explanation.  $\frac{1}{5} = 0.2$   $0.2 + 2.5 = 2.7$ ,  $2.7 - 6 = -3.3$ .

Question Number. 126. Express 173942 in standard form.

Option A.  $17.3942 \times 10^4$ .

Option B.  $173.942 \times 10^3$ .

Option C.  $1.73942 \times 10^5$ .

Correct Answer is.  $1.73942 \times 10^5$ .

Explanation. Standard form has the mantissa between 1 and 10.

Question Number. 127. The sum of an odd number + an odd number is a.

Option A. either odd or even.

Option B. odd number.

Option C. even number.

Correct Answer is. even number.

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Question Number. 128. Express 750 milligrams in grams.

Option A. 0.0000075.

Option B. 0.075.

Option C. 0.75.

Correct Answer is. 0.75.

Explanation. 'milli' is divide by 1000.

Question Number. 129. There is 1800 pounds of fuel in an aircraft, 25% in the left tank and 45% in the right. How much fuel is in the centre tank?.

Option A. 810 pounds.

Option B. 450 pounds.

Option C. 540 pounds.

Correct Answer is. 540 pounds.

Explanation.  $30\% \times 1800 = 540$ .

Question Number. 130. What is the supplement of an angle of  $37^\circ$ ?

Option A.  $8^\circ$ .

Option B.  $53^\circ$ .

Option C.  $143^\circ$ .

Correct Answer is.  $143^\circ$ .

Explanation.  $180 - 37 = 143^\circ$ .

Question Number. 131. To what power must 10 be raised to equal 100,000?

Option A. 6.

Option B. 4.

Option C. 5.

Correct Answer is. 5.

Explanation. An easy way to tell the power of 10 to which a number has been raised is to count the number of places the decimal point would have to be moved to leave a number between 1 and 10. Remember the decimal point though not written will be after the unit, in this case the last 0.

Question Number. 132. Find the square root of 1600.

Option A. 80.

Option B. 40.

Option C. 800.

Correct Answer is. 40.

Explanation.  $1600 = 16 \times 100$   $\sqrt{1600} = \sqrt{16 \times 100} = 4 \times 10 = 40$ .

Question Number. 133. What is the ratio of 5 feet to 30 inches?

Option A. 2 : 1.

Option B. 5 : 3.

Option C. 1 : 6.

Correct Answer is. 2 : 1.

Explanation. In any ratio calculation the units must be the same. 5 feet is equal to 60 inches.

Ratio of 60 : 30 or  $60/30$  is 2 : 1.

Question Number. 134. Evaluate  $5[3 + 6(7-4)-2]$ .

Option A. 31.

Option B. 395.

Option C. 95.

Correct Answer is. 95.

Explanation. First work out the inner brackets:  $7-4=3$ , then multiply by 6:  $6*3=18$ , Next the outer brackets :  $3+18-2=19$ , Finally multiply by 5:  $5*19=95$ .

Question Number. 135. Find the value of  $3[5-2(4-7)]$ .

Option A. 9.

Option B. -3.

Option C. 33.

Correct Answer is. 33.

Explanation. First work out the inner brackets:  $4-7=-3$ , then multiply by -2:  $-2*-3 = 6$ , Remember that  $-*-+$ , Next the outer brackets:  $5+6=11$ , finally multiply by the 3:  $3*11=33$ .

Question Number. 136. What is the cube root of -64?.

Option A. 4.

Option B. -8.

Option C. -4.

Correct Answer is. -4.

Explanation. The cube root of a number is the number which when multiplied by itself 3 times gives the number. In this example  $-4*-4*-4=-64$  hence the answer is -4.

Question Number. 137. What is the cube root of 82 .

Option A. 2.

Option B. 4.

Option C. 8.

Correct Answer is. 4.

Explanation.  $82 = 64$ , cube root of 64 is 4 as  $4*4*4=64$ .

Question Number. 138. An engine of 96 horsepower is running at 75% power. What horsepower is being developed?.

Option A. 72.

Option B. 168.

Option C. 62.

Correct Answer is. 72.

Explanation.  $75\% = 75/100 = 3/4$ ,  $3/4 \times 96 = 3 \times 24 = 72$ .

Question Number. 139. A blueprint shows a hole of 0.3751 to be drilled. What fraction size drill bit is most nearly equal?.

Option A.  $5/16$ .

Option B.  $3/8$ .

Option C.  $3/16$ .

Correct Answer is.  $3/8$ .

Explanation.  $3/16 = 0.1875$ ,  $5/16 = 0.3125$ ,  $3/8 = 0.375$ ,  $3/8$  drill is the nearest.

Question Number. 140. 120 out of 125 bolts produced are of an acceptable tolerance. What percentage of the bolts are not acceptable?.

Option A. 5%.

Option B. 4%.

Option C. 25%.

Correct Answer is. 4%.

Explanation. Acceptable bolts  $120/125 = 24/25$ , as a percentage this is  $24/25 \times 100 = 96\%$ , Unacceptable bolts are  $100\% - 96\% = 4\%$ .

Question Number. 141. Evaluate  $1/4 + 3/8 - 1/2$ .

Option A.  $1/8$ .

Option B.  $1/14$ .

Option C.  $1/2$ .

Correct Answer is.  $1/8$ .

Explanation. Change all the fractions to a common denominator  $1/4$  becomes  $2/8$ ,  $3/8$  remains same,  $1/2$  becomes  $4/8$ . Now solve them by adding top Numerators SO answer is  $1/8$ .

Question Number. 142.  $3 \frac{3}{4} + 4 \frac{2}{3} =$ .

Option A.  $8 \frac{5}{12}$ .

Option B.  $7 \frac{5}{12}$ .

Option C.  $7 \frac{5}{7}$ .

Correct Answer is.  $8 \frac{5}{12}$ .

Explanation. add the whole numbers:  $3+4 = 7$ , add the fraction  $\frac{3}{4} + \frac{2}{3} = \frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1 \frac{5}{12}$ , add on the 7:  $8 \frac{5}{12}$ .

Question Number. 143. An aircraft travels 1400 nautical miles in 1 hour 45 minutes. What is the average speed of the aircraft?.

Option A. 750 knots.

Option B. 2450 knots.

Option C. 800 knots.

Correct Answer is. 800 knots.

Explanation. Average speed is found by dividing total distance by total time.  $1400 / 1 \frac{3}{4}$ . This is done by dividing 1400 by  $\frac{7}{4} = 1400 * \frac{4}{7} = 200 * 4 = 800$ .

Question Number. 144. Evaluate  $0.8 * 0.004$ .

Option A. 0.32.

Option B. 0.0032.

Option C. 0.032.

Correct Answer is. 0.0032.

Explanation. Count the digits to the right of the decimal points in both numbers (4), multiply the numbers without the points  $8 \times 4 = 32$ , put the decimal point so there are the same number (4) as in the question adding 0's as appropriate (0.0032).

Question Number. 145. Convert 10 inches to millimetres.

Option A. 2540 mm.

Option B. 254 mm.

Option C. 25.4 mm.

Correct Answer is. 254 mm.

Explanation. 1 inch = 2.54 cm = 25.4 mm, 10 inches =  $10 \times 25.4 = 254$  mm.

Question Number. 146. What number is the highest common factor of 24, 84, 120?.

Option A. 8.

Option B. 12.

Option C. 24.

Correct Answer is. 12.

Explanation.  $24 = 2 * 2 * 2 * 3$ ,  $84 = 2 * 2 * 3 * 7$  HCF will be  $2 * 2 * 3 = 12$ ,  $120 = 2 * 2 * 2 * 3 * 5$ .



Question Number. 147. 0.0000314 can be written as.

Option A.  $3.14 \times 10^{-5}$ .

Option B.  $3.14 \times 10^5$ .

Option C.  $3.14 \times 10^{-4}$ .

Correct Answer is.  $3.14 \times 10^{-5}$ .

Explanation. The negative power indicates a reciprocal.  $10^{-5} = 1/10,000$ , The easy way to do this problem is to count the number of places you need to move the decimal point to leave you with a number between 1 and 10. In this case it is 5.

Question Number. 148. What is the Lowest Common Multiple of 5; 12; 20.

Option A. 60.

Option B. 120.

Option C. 5.

Correct Answer is. 60.

Explanation. The lowest common multiple is the lowest number each number will divide into exactly. In this case the required number is 60.

Question Number. 149. Evaluate  $\frac{1}{4}\{(4-6)-(2-8)\}$ .

Option A.  $\frac{3}{4}$ .

Option B. -2.

Option C. 1.

Correct Answer is. 1.

Explanation. First work out the the two inner brackets:  $(4-6)=-2$  and  $(2-8)=-6$ , then  $-(-6) = +6$  followed by  $-2 + 6 = 4$  and finally  $\frac{1}{4} \times 4 = 1$ .

Question Number. 150. What is the average of the following numbers? 5, 13, 23, 12, 17.

Option A. 14.

Option B. 15.

Option C. 23.

Correct Answer is. 14.

Explanation. The average(mean) of a set of numbers is the sum divided by the number of numbers.  $5+13+23+12+17 = 70$ ; 70 divided by 5 = 14.

Question Number. 151. What is the volume of a rectangular tank 5m by 4 m by 150cm?.

Option A. 3000 cu.m.

Option B. 30 sq.m.

Option C. 30 cu.m.

Correct Answer is. 30 cu.m.

Explanation. Volume of a cuboid is Length \* Width \* Height For this problem the dimensions are  $5\text{m} * 4\text{m} * 1.5\text{m} = 30\text{cu. m.}$

Question Number. 152. What is the depth of a rectangular tank whose volume is 40 cu. m. and has a base 5m by 10m?.

Option A. 8m.

Option B. 80cm.

Option C. 0.08m.

Correct Answer is. 80cm.

Explanation.  $V = L * W * H$  , The height will be found by dividing volume by length x width This will give an answer of 0.8m or 80cm.

Question Number. 153. Convert 20 imperial gallons to litres.

Option A. 909.2 litres.

Option B. 9.092 litres.

Option C. 90.92 litres.

Correct Answer is. 90.92 litres.

Explanation. 1 gallon = 4.546 litres, 20 gallons =  $20 \times 4.546 = 90.92$  litres.

Question Number. 154. To find the area of a circle use the formula.

Option A.  $2\pi d$ .

Option B.  $\pi r^2$  .

Option C.  $2\pi r$ .

Correct Answer is.  $\pi r^2$  .

Explanation.  $2\pi r$  or  $\pi d$  is the formula to find the area of a circle.

Question Number. 155. What is the circumference of the top of a cylindrical tank whose radius is 3 metres?.

Option A.  $3\pi$  metres.

Option B.  $6\pi$  metres.

Option C.  $9\pi$  metres.

Correct Answer is.  $6\pi$  metres.

Explanation. Circumference =  $2\pi R$ .

Question Number. 156. 67.5 cu.m.

Option A. 67.5 cu.m.

Option B. 675,000 cu.cm.

Option C. 6.75 cu.m.

Correct Answer is. 6.75 cu.m.

Explanation. volume of a cylinder =  $\pi r^2 \times h = 3 \times (0.75)^2 \times h$ , vol =  $1.7 \times 4 = 6.75$  cu.m.,

Remember all units must be the same so 150cm is changed to 1.5 m.

Question Number. 157. What is the surface area of a cylindrical pipe of length 150 cm and diameter 5cm?.

Option A.  $1500\pi$  sq.cm.

Option B.  $750\pi$  sq.cm.

Option C.  $3750\pi$  sq.cm.

Correct Answer is.  $750\pi$  sq.cm.

Explanation. Surface Area of a cylinder =  $\pi d \times L = \pi \times 5 \times 150 = 750\pi$  sq.cm.

Question Number. 158. Find the value of  $\frac{5}{8}$  of  $\frac{4}{5}$ .

Option A.  $\frac{1}{2}$ .

Option B.  $\frac{3}{4}$ .

Option C.  $\frac{25}{32}$ .

Correct Answer is.  $\frac{1}{2}$ .

Explanation.  $\frac{5}{8}$  of  $\frac{4}{5}$  is the same as  $\frac{5}{8} \times \frac{4}{5}$  by cancelling top and bottom of the fractions, 5's cancel leaving  $\frac{4}{8} = \frac{1}{2}$ .

Question Number. 159. What is the square root of 4 raised to the fifth power?.

Option A. 32.

Option B. 128.

Option C. 64.

Correct Answer is. 32.

Explanation. The square root of 4 is 2 two raised to the 5th power is  $2*2*2*2*2 = 32$ .

Question Number. 160.  $-3[8-3(5+\sqrt{9})-(7-9)]$ .

Option A. 60.

Option B. -42.

Option C. 42.

Correct Answer is. 42.

Explanation. Work out the inside brackets first:  $5 + \sqrt{9} = 5 + 3 = 8$ , then  $-3 * 8 = -24$ , next  $7-9 = -2$ , then  $8-24 -(-2) = -14$ , finally  $-3 * -14 = 42$ .

Question Number. 161. Which of the fractions is equivalent to 0.075?.

Option A.  $1/40$ .

Option B.  $3/4$ .

Option C.  $3/40$ .

Correct Answer is.  $3/40$ .

Explanation.  $3/4 = 0.75$ ,  $1/40 = 0.025$ ,  $3/40 = 0.075$ .

Question Number. 162. Express  $3/8$  as a percentage.

Option A. 3.75%.

Option B. 0.375%.

Option C. 37.5%.

Correct Answer is. 37.5%.

Explanation. To change a fraction to a percentage first find the equivalent decimal in this case it is 0.375., Then multiply by 100 to give 37.5%.

Question Number. 163. An aeroplane flies 1000 miles and uses 80 gallons of fuel. How much fuel will it use on a 2500 mile flight?.

Option A. 240 gallons.

Option B. 250 gallons.

Option C. 200 gallons.

Correct Answer is. 200 gallons.

Explanation. If an airplane uses 80 gallons to fly 1000 miles the fuel consumption is 1000 divided by 80 = 12.5 miles per gallon., The fuel used for a 2500 mile flight will be  $2500 / 12.5 = 200$  gallons.

Question Number. 164. A pinion gear with 16 teeth is driving a spur gear with 48 teeth at 120 RPM. Find the speed of the pinion gear.

Option A. 40 RPM.

Option B. 360 RPM.

Option C. 144 RPM.

Correct Answer is. 360 RPM.

Explanation. The speed ratio is the reciprocal of the gear ratio. The spur gear with 48 teeth is driven by a pinion gear of 16 teeth. This gives a gear ratio of  $48:16 = 3:1$ . This means the spur gear will turn at  $1/3$  of the speed of the pinion gear, and the pinion gear will turn at 3 times the speed of the spur gear. If the spur gear turns at a speed of 120 RPM the pinion turns at a speed of 360 RPM.

Question Number. 165. What is the piston displacement of a master cylinder with a 4cm diameter bore and a piston stroke of 10 cm?.

Option A.  $8\pi$  cu.cm.

Option B.  $40\pi$  cu.cm.

Option C.  $160\pi$  cu.cm.

Correct Answer is.  $40\pi$  cu.cm.

Explanation. The piston displacement of a master cylinder is found by multiplying the area of the piston head by its stroke. The area of the piston is  $\pi R^2 = \pi \times 2^2 = 4\pi$ , Therefore the piston displacement will be  $40\pi$  cu.cm.

Question Number. 166. The curved surface area of a right cone is.

Option A.  $11/3 \pi RL$ .

Option B.  $\pi RL$ .

Option C.  $\pi R^2 H$ .

Correct Answer is.  $\pi RL$ .

Question Number. 167. How many millimetres in an inch?.

Option A. 2.54.

Option B. 25.4.

Option C. 2540.

Correct Answer is. 25.4.

Question Number. 168. Find the the area of a circular ring Whose outer diameter is 10 cm and inner diameter is 6 diameter?.

Option A.  $64\pi$  sq. cm.

Option B.  $16\pi$  sq. cm.

Option C.  $4\pi$  sq. cm.

Correct Answer is.  $16\pi$  sq. cm.

Explanation. Area of a ring is  $\pi (R^2 - r^2)$   $A = \pi(5^2 - 3^2)$ .

Question Number. 169. Find the area of the triangle shown.

Option A. 9 cm<sup>2</sup> .

Option B. 12 cm<sup>2</sup> .

Option C. 6 cm<sup>2</sup> .

Correct Answer is. 6 cm<sup>2</sup> .

Explanation.  $A = \frac{1}{2}bh$  where b = base, and h = height. In this case  $A = \frac{1}{2} * 3 * 4 = 6$  cm<sup>2</sup> .

Question Number. 170. What is the area of the shape shown, in square cm?.

Option A. 5900.

Option B. 590.

Option C. 5.9.

Correct Answer is. 5.9.

Explanation. Divide the shape into three rectangles. ,  $(10 * 30) + (20 * 7) + (10 * 15) = 300 + 140 + 150 = 590$  mm<sup>2</sup> , 1 cm<sup>2</sup> =  $10 \times 10 = 100$  mm<sup>2</sup> , so the answer is  $590/100 = 5.9$  cm<sup>2</sup> .

Question Number. 171. What is the area of the trapezium shown?.

Option A. Area cannot be calculated from information given.

Option B. 27 cm<sup>2</sup> .

Option C. 24 cm<sup>2</sup> .

Correct Answer is. 24 cm<sup>2</sup> .

Explanation. Area of a trapezium (called trapezoid in US) is  $A = \frac{1}{2}(a+b)h$ . a and b are the two parallel sides., h is the perpendicular distance between them.  $A = \frac{1}{2}(5+7)4 = 6 * 4 = 24$  cm<sup>2</sup>.

Question Number. 172. What is the depth of water in the tank shown if the volume of water is 4000 litres?.

Option A. 80 cm.

Option B. 5 m.

Option C. 50 cm.

Correct Answer is. 50 cm.

Explanation. 1 litre = 1000 cm<sup>3</sup> , 4000 litres = 4,000,000 cm<sup>3</sup> , Volume of water is 4m x 2m x depth, Change to cm 400 \* 200 \* depth = 4,000,000, Therefore, depth = 4,000,000/(400\*200) = 400/8 = 50 cm.

Question Number. 173. What is the area of the sector shown? Take  $\pi=3.14$ .

Option A. 50 cm.

Option B.  $52\frac{1}{3}$  cm.

Option C. 10.5 cm.

Correct Answer is.  $52\frac{1}{3}$  cm.

Explanation. Area of a circle =  $\pi r^2$  , =  $3.14 * 10^2$  , = 314cm<sup>2</sup> , Area of sector =  $60/360 * 314 = 314/6 = 52\frac{1}{3}$  cm<sup>2</sup> .

Question Number. 174. What is the volume of metal used in the pipe shown?.

Option A.  $4500\pi$  cm<sup>2</sup> .

Option B.  $45\pi$  cm<sup>2</sup> .

Option C.  $18000\pi$  cm<sup>2</sup> .

Correct Answer is.  $4500\pi$  cm<sup>2</sup> .

Explanation. Work out the volume of the metal by subtracting the volume of the hole from the outside volume of the pipe.,  $\pi R^2 h - \pi r^2 h = \pi h(R^2 - r^2)$  , =  $\pi \times 500 \times (52^2 - 42^2)$  .

Question Number. 175. 24/0 (twenty four divided by nothing) is.

Option A. nothing.

Option B. infinity.

Option C. twenty four.

Correct Answer is. infinity.

Explanation.  $24/0 = \text{infinity}$ .

Question Number. 176. If 20% of 120 is 24, what is 24% of 20?.

Option A. 4.8.

Option B. 28.

Option C. 18.

Correct Answer is. 4.8.

Explanation. 10% of 20 = 2, therefore 20% of 20 = 4, 4% of 10 = 0.4, therefore 4% of 20 = 0.8.,  
 $4 + 0.8 = 4.8$ .

Question Number. 177. A shop keeper sold his car for £120. If this is 80% of the buying price, how much loss did he make?.

Option A. £50.

Option B. £150.

Option C. £30.

Correct Answer is. £30.

Explanation. Buying price  $\times 80/100 = 120$ , Buying price  $\times 80 = 120 \times 100$ , Buying price =  
 $12000/80 = 150$ ,  $150 - 120 = £30$ .

Question Number. 178.  $3 + 4 - 5(4 - 2) =$ .

Option A. 13.

Option B. 4.

Option C. -3.

Correct Answer is. -3.

Explanation.  $3 + 4 - 5(4 - 2) = 7 - 5(2)$ ,  $7 - 10 = -3$ .