

## CHAPTER 17

## MATH QUESTIONS ANSWERS

1. 1,499,768.5 yards<sup>3</sup>

$$\frac{(630 + 415)}{2} \times \frac{522.5 \times 1250 \times 62}{27} = 1,499,768.5$$

2. 270,182.29 tons

$$\frac{1250 \times 415 \times 12.5}{24} = 270,182.29$$

3. 1,273.62 tons

$$\frac{20 \times 20 \times 7854 \times 1.5}{37} = 1,273.62$$

$$(\pi) 1272.97 \text{ tons} \quad \frac{10^2 \times 3.14 \times 150}{37} = 1,272.97$$

4. 93.33 yards

$$\frac{120 \times 42 \times 0.5}{5} = 93.33$$

5. 10.284 minutes

$$\frac{6}{5} \times 0.1714 \times 60 = 10.284$$

6. 2.594 miles

$$\frac{27.4 \times 500}{5280} = 2.594$$

7. 8 Ohms

$$\frac{480}{60} = 8$$

8. 11,454.54

$$\frac{180 \times 70 \times 40}{2} \times \frac{1}{22} = 11,454.54$$

9. 188.496 minutes; or 3 hours, 8.5 minutes

$$\frac{20 \times 20 \times 0.7854 \times 40 \times 7.5}{500} = 188.496$$

( $\pi$ ) 188.40 minutes; or 3 hours, 8.4 minutes

$$\frac{10^2 \times 3.14 \times 40 \times 7.5}{500} = 188.40$$

10. 48 volts  $\frac{576}{12} = 48$

11. 708,888.88 yards<sup>3</sup>

$$\frac{(300 + 250)}{2} = \frac{275 \times 870 \times 80}{27} = 708,888.88$$

12. 1,269,333.3 yards<sup>3</sup>

$$\frac{1050 \times 68 \times 480}{27} = 1,269,333.3$$

13. 1,672,611.1 yards<sup>3</sup>

$$\frac{(520 + 400)}{2} = \frac{460 \times 935 \times 105}{27} = 1,672,611.1$$

14. 2,422,814.8 yards<sup>3</sup>

$$\frac{1300 \times 74 \times 680}{27} = 2,422,814.8$$

15. 974,722.21 tons

$$\frac{708,888.88 \times 2750}{2000} = 974,722.21$$

16. 1,586,666.6 tons

$$\frac{1,269,333.3 \times 2,500}{2000} = 1,586,666.6$$

17. 146,234 tons

$$\frac{(520 + 400)}{2} = \frac{460 \times 935 \times 8.5}{25} = 146,234$$

18. 393,956.52 tons

$$\frac{1,300 \times 680 \times 10.25}{23} = 393,956.52$$

19. 6,631.19 tons

$$\frac{28 \times 28 \times 0.7854 \times 280}{26} = 6,631.19$$

(π) 6,627.82 tons.

$$\frac{14^2 \times 3.14 \times 280}{26} = 6,627.82$$

20. 21,089.44 tons

$$\frac{50 \times 50 \times 0.7854 \times 290}{27} = 21,089.44$$

(π) 21,078.70 tons.

$$\frac{25^2 \times 3.14 \times 290}{27} = 21,078.70$$

21. 1,610 tons

$$\frac{14 \times 14 \times 230}{28} = 1,610$$

22. 129.63 yards<sup>3</sup>

$$\frac{125 \times 56 \times .5}{27} = 129.63$$

23. 15.358 yards<sup>3</sup>

$$\frac{40 \times 40 \times 0.7854 \times 0.33}{27} = 15.358$$

( $\pi$ ) 15.351 yards<sup>3</sup>

$$\frac{20^2 \times 3.14 \times .33}{27} = 15.351$$

24. 742.2 minutes; or; 12 hours, 22 minutes

$$\frac{30 \times 30 \times 0.7854 \times 70 \times 7.5}{500} = 742.2$$

( $\pi$ ) 741.8 minutes; or; 12 hours, 21 minutes

$$\frac{15^2 \times 3.14 \times 70 \times 7.5}{500} = 741.8$$

25. 5.54% grade

$$\frac{(6200 - 3428) \times 2772}{5000} = 2772 \times 0.0554 = 5.54\%$$