

SHOW ALL WORK AS NECESSARY ON THIS TEST OR ON SEPARATE PAPER.
CALCULATORS ARE REQUIRED ON THIS TEST. SIMPLIFY ALL RADICALS
COMPLETELY.

1. $\sqrt{49}$

2. $\sqrt{16x^8}$

3. $\sqrt{40}$

4. $\sqrt{175}$

5. $\sqrt{45}$

6. $\sqrt{72}$

7. $\sqrt{98x^4}$

8. $\sqrt{27x^8y^{11}}$

9. $\sqrt{9x^9}$

10. $\sqrt{24x^{24}}$

11. $\sqrt{20x^6y^5}$

12. $\sqrt{50x^{11}y^{16}}$

13. $\sqrt{75y^5}$

14. $\sqrt{144x^{15}y^{25}}$

15. $\sqrt{150x^7y^{14}}$

16. $\sqrt{200x^{15}y^3}$

17. $\sqrt[3]{64}$

18. $\sqrt[3]{27x^{12}}$

19. $\sqrt[3]{250}$

20. $\sqrt[3]{72}$

21. $\sqrt{6} + \sqrt{6}$

22. $\sqrt{40} + \sqrt{90}$

23. $\sqrt{18} + \sqrt{50}$

24. $8\sqrt{28} - 2\sqrt{63}$

25. $6\sqrt{75} + 4\sqrt{12} - 12\sqrt{27}$

26. Give the calculator value of $\sqrt{18} + \sqrt{50}$ (round to nearest hundredth).

27. Give the calculator value of $6\sqrt{75} + 4\sqrt{12} - 12\sqrt{27}$ (round to nearest hundredth).

28. $\sqrt{6} \cdot \sqrt{6}$

29. $3\sqrt{6} \cdot 7\sqrt{15}$

30. $4\sqrt{26} \cdot 5\sqrt{39}$

31. $5\sqrt{2}(6\sqrt{5} - 2\sqrt{3})$

32. $4\sqrt{6}(6\sqrt{2} + 5\sqrt{3})$

33. $(4 - \sqrt{3})(4 + \sqrt{3})$

34. $(6 - \sqrt{3})(4 - \sqrt{3})$

35. $(\sqrt{6} - 5\sqrt{5})(\sqrt{6} + 2\sqrt{5})$

36. $(8\sqrt{6} - 5\sqrt{3})(5\sqrt{6} + 2\sqrt{3})$

37. $(\sqrt{6} + \sqrt{2})^2$

38. $(8\sqrt{6} - 5\sqrt{3})^2$

39. Calculate the value of $(8\sqrt{6} - 5\sqrt{3})^2$ rounded to the nearest hundredth.

Extra Credit: Calculate the value of $(8\sqrt{6} - 5\sqrt{3})^2 + (8\sqrt{6} + 5\sqrt{3})^2$.

BASIC ALGEBRA EXAM 5C^{*} Solutions

1. $\sqrt{49}$ (7) 2. $\sqrt{16x^8}$ ($4x^4$) 3. $\sqrt{40}$ ($\frac{\sqrt{4}\sqrt{10}}{2\sqrt{10}}$) 4. $\sqrt{175}$ ($\frac{\sqrt{25}\sqrt{7}}{5\sqrt{7}}$) 5. $\sqrt{45}$ ($\frac{\sqrt{9}\sqrt{5}}{3\sqrt{5}}$) 6. $\sqrt{72}$ ($\frac{\sqrt{36}\sqrt{2}}{6\sqrt{2}}$) 7. $\sqrt{98x^4}$ ($\frac{\sqrt{49x^4}\sqrt{2}}{7x^2\sqrt{2}}$)
8. $\sqrt{27x^8y^{11}}$ ($\frac{\sqrt{9x^8y^{10}}\sqrt{3y}}{3x^4y^5\sqrt{3y}}$) 9. $\sqrt{9x^9}$ ($\frac{\sqrt{9x^8}\sqrt{x}}{3x^4\sqrt{x}}$) 10. $\sqrt{24x^{24}}$ ($\frac{\sqrt{4x^{24}}\sqrt{6}}{2x^{12}\sqrt{6}}$) 11. $\sqrt{20x^6y^5}$ ($\frac{\sqrt{4x^6y^4}\sqrt{5y}}{2x^3y^2\sqrt{5y}}$) 12. $\sqrt{50x^{11}y^{16}}$ ($\frac{\sqrt{25x^{10}y^{16}}\sqrt{2x}}{5x^5y^8\sqrt{2x}}$)
13. $\sqrt{75y^5}$ ($\frac{\sqrt{25y^4}\sqrt{3y}}{5y^2\sqrt{3y}}$) 14. $\sqrt{144x^{15}y^{25}}$ ($\frac{\sqrt{144x^{14}y^{24}}\sqrt{xy}}{12x^7y^{12}\sqrt{xy}}$) 15. $\sqrt{150x^7y^{14}}$ ($\frac{\sqrt{25x^6y^{14}}\sqrt{6x}}{5x^3y^7\sqrt{6x}}$) 16. $\sqrt{200x^{15}y^3}$ ($\frac{\sqrt{100x^{14}y^2}\sqrt{2xy}}{10x^7y\sqrt{2xy}}$)
17. $\sqrt[3]{64} = 4$ 18. $\sqrt[3]{27x^{12}}$ ($3x^4$) 19. $\sqrt[3]{250}$ ($\frac{\sqrt[3]{125}\sqrt[3]{2}}{5\sqrt[3]{2}}$) 20. $\sqrt[3]{72}$ ($\frac{\sqrt[3]{8}\sqrt[3]{9}}{2\sqrt[3]{9}}$) 21. $\sqrt{6} + \sqrt{6}$ ($2\sqrt{6}$)
22. $\sqrt{40} + \sqrt{90}$ ($\frac{\sqrt{4}\sqrt{10} + \sqrt{9}\sqrt{10}}{2\sqrt{10} + 3\sqrt{10}} = 5\sqrt{10}$) 23. $\sqrt{18} + \sqrt{50}$ ($\frac{\sqrt{9}\sqrt{2} + \sqrt{25}\sqrt{2}}{3\sqrt{2} + 5\sqrt{2}} = 8\sqrt{2}$) 24. $8\sqrt{28} - 2\sqrt{63}$ ($\frac{8\sqrt{4}\sqrt{7} - 2\sqrt{9}\sqrt{7}}{8 \cdot 2\sqrt{7} - 2 \cdot 3\sqrt{7}} = \frac{16\sqrt{7} - 6\sqrt{7}}{10\sqrt{7}} = 10\sqrt{7}$)
25. $6\sqrt{75} + 4\sqrt{12} - 12\sqrt{27}$ ($2\sqrt{3}$) 26. (11.31) 27. (3.46) 28. $\sqrt{6}\sqrt{6}$ (6) 29. $3\sqrt{6} \cdot 7\sqrt{15}$ ($21\sqrt{90} = 21 \cdot \sqrt{9}\sqrt{10} = 63\sqrt{10}$)
30. $4\sqrt{26} \cdot 5\sqrt{39}$ ($20\sqrt{13 \cdot 2 \cdot 13 \cdot 3} = 20 \cdot \sqrt{13^2} \sqrt{6} = 20 \cdot 13 \sqrt{6} = 260\sqrt{6}$) 31. $5\sqrt{2}(6\sqrt{5} - 2\sqrt{3})$ ($30\sqrt{10} - 10\sqrt{6}$) 32. $4\sqrt{6}(6\sqrt{2} + 5\sqrt{3})$ ($24\sqrt{12} + 20\sqrt{18} = 24\sqrt{4}\sqrt{3} + 20\sqrt{9}\sqrt{2} = 48\sqrt{3} + 60\sqrt{2}$) 33. $(4 - \sqrt{3})(4 + \sqrt{3})$ (13) 34. $(6 - \sqrt{3})(4 - \sqrt{3})$ ($24 - 6\sqrt{3} - 4\sqrt{3} + 3 = 27 - 10\sqrt{3}$) 35. $(\sqrt{6} - 5\sqrt{5})(\sqrt{6} + 2\sqrt{5})$ ($6 + 2\sqrt{30} - 5\sqrt{30} - 10 = 6 - 3\sqrt{30} - 50 = -44 - 3\sqrt{30}$)
36. $(8\sqrt{6} - 5\sqrt{3})(5\sqrt{6} + 2\sqrt{3})$ ($40 \cdot 6 + 16\sqrt{18} - 25\sqrt{18} - 10 \cdot 3 = 240 - 9\sqrt{18} - 30 = 210 - 9 \cdot \sqrt{9}\sqrt{2} = 210 - 27\sqrt{2}$) 37. $(\sqrt{6} + \sqrt{2})(\sqrt{6} + \sqrt{2})$ ($6 + \sqrt{12} + \sqrt{12} + 2 = 8 + 2\sqrt{12} = 8 + 2\sqrt{4}\sqrt{3} = 8 + 4\sqrt{3}$) 38. $(8\sqrt{6} - 5\sqrt{3})(8\sqrt{6} - 5\sqrt{3})$ ($64 \cdot 6 - 40\sqrt{18} - 40\sqrt{18} + 25 \cdot 3 = 384 - 80\sqrt{18} + 75 = 459 - 80\sqrt{9}\sqrt{2} = 459 - 240\sqrt{2}$)
39. 119.59 40. 918; Question: Why does $(8\sqrt{6} - 5\sqrt{3})^2 + (8\sqrt{6} + 5\sqrt{3})^2$ come out even??
Answer: $(459 - 240\sqrt{2}) + (459 + 240\sqrt{2})$