

Bell work:

Simplify

$$1) (10 + 5\sqrt{2})(10 - 5\sqrt{2})$$

$$100 - 25(2)$$

$$100 - 50$$

$$\boxed{50}$$

$$(2) \frac{(4 - \sqrt{10})(1 - 2\sqrt{10})}{1 + 2\sqrt{10}} (1 - 2\sqrt{10})$$

$$4 - 8\sqrt{10} - \sqrt{10} + 2(10)$$

$$24 - 9\sqrt{10}$$

Notes

$$1) 11\sqrt{5} + 3\sqrt{5} = 14\sqrt{5}$$

$$2) 10\sqrt[3]{ab} - 2\sqrt[3]{ab} = 8\sqrt[3]{ab}$$

$$3) 10\sqrt[3]{m} + 4\sqrt[3]{n} = 10\sqrt[3]{m} + 4\sqrt[3]{n}$$

$$\begin{aligned} 4) \quad & 4\sqrt{48} + 3\sqrt{27} \\ & 4\sqrt{\cancel{16}^4}\sqrt{3} + 3\sqrt{\cancel{9}^3}\sqrt{3} \\ & 16\sqrt{3} + 9\sqrt{3} \\ & 25\sqrt{3} \end{aligned}$$

$$\begin{aligned} (5) \quad & \sqrt[3]{108} + \sqrt[3]{500} \\ & \sqrt[3]{27}\sqrt[3]{4} + \sqrt[3]{125}\sqrt[3]{4} \\ & 3\sqrt[3]{4} + 5\sqrt[3]{4} \\ & 8\sqrt[3]{4} \end{aligned}$$

$$\begin{aligned}
 6) \quad & \sqrt{32} + 6\sqrt{50} + 10\sqrt{72} \\
 & \sqrt{16}\sqrt{2} + 6\sqrt{\frac{5}{25}}\sqrt{2} + 10\sqrt{\frac{6}{36}}\sqrt{2} \\
 & 4\sqrt{2} + 30\sqrt{2} + 60\sqrt{2} \\
 & 94\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 7) \quad & 7\sqrt{54y^2} + 4\sqrt{96y^2} \\
 & 7\sqrt{\frac{3}{9}}\sqrt{6}\sqrt{\frac{y}{y^2}} + 4\sqrt{\frac{4}{16}}\sqrt{6}\sqrt{\frac{y}{y^2}} \\
 & 21y\sqrt{6} + 16y\sqrt{6} \\
 & 37y\sqrt{6}
 \end{aligned}$$

$$\begin{aligned}
 8) \quad & (\sqrt{3} + 3\sqrt{8})^2 \\
 & (\sqrt{3})^2 + (\sqrt{3})(3\sqrt{8})(2) + (3\sqrt{8})^2 \\
 & 3 + \frac{6\sqrt{24}}{6\sqrt{4}\sqrt{6}} + \frac{9(8)}{72} = 75 + 12\sqrt{6}
 \end{aligned}$$