

Simplify each of the following.

1. $6^3 = 6 \times 6 \times 6 = 36 \times 6$

$$\begin{array}{r} 36 \\ \times 6 \\ \hline 216 \end{array}$$

$6^3 = 216$

2. $-4^5 = -(4 \times 4 \times 4 \times 4 \times 4) = -(16 \times 16 \times 4)$

$$\begin{array}{r} 16 \\ \times 16 \\ \hline 96 \\ + 160 \\ \hline 256 \end{array}$$

$-4^5 = -(256 \times 4)$

$$\begin{array}{r} 256 \\ \times 4 \\ \hline 1024 \end{array}$$

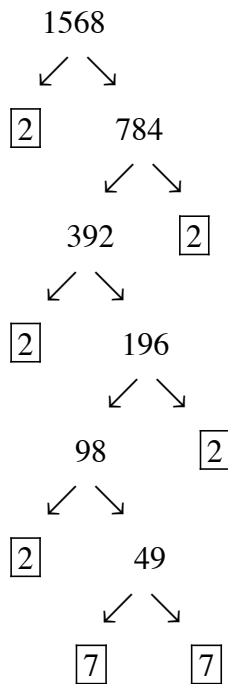
$-4^5 = -(1024) = -1,024$

3. $(2 + 4)^2 = 6^2 = 36$

4. $(-6 + 7 - 3)^4 = (-2)^4 = (-2)(-2)(-2)(-2) = (4)(4) = 16$

5. $(3^2)^2 = (3 \times 3)^2 = 9^2 = 81$

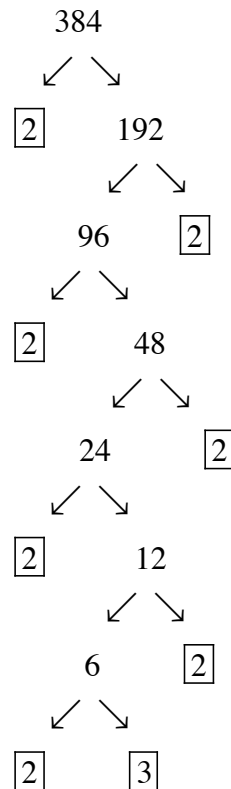
6. $\sqrt{1568}$



$$1568 = 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7$$

$$\begin{aligned} \sqrt{1568} &= \sqrt{\boxed{2 \times 2} \times \boxed{2 \times 2} \times 2 \times \boxed{7 \times 7}} \\ &= 2 \times 2 \times 7 \times \sqrt{2} \\ &= 28\sqrt{2} \end{aligned}$$

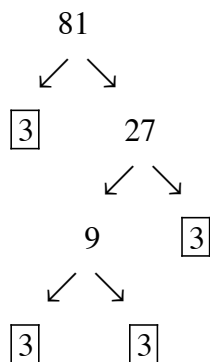
7. $\sqrt[3]{384}$



$$384 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

$$\begin{aligned} \sqrt[3]{384} &= \sqrt[3]{\boxed{2 \times 2 \times 2} \times \boxed{2 \times 2 \times 2} \times 2 \times 3} \\ &= 2 \times 2 \times \sqrt[3]{2 \times 3} \\ &= 4\sqrt[3]{6} \end{aligned}$$

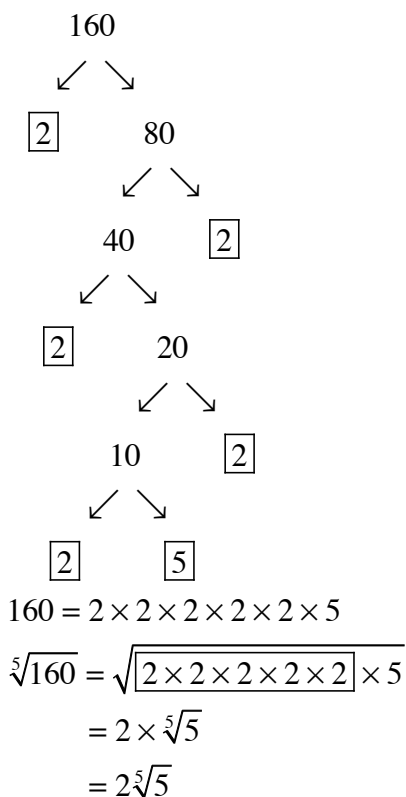
8. $\sqrt[3]{81}$



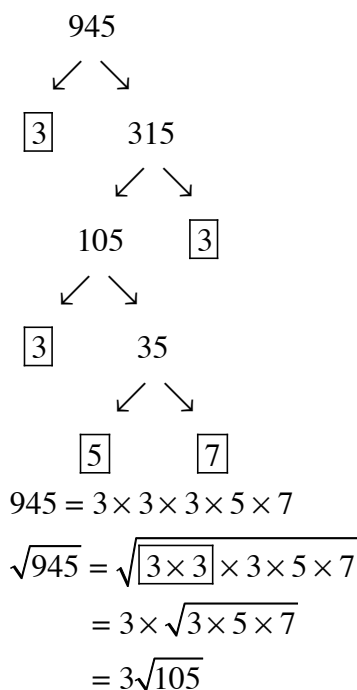
$$81 = 3 \times 3 \times 3 \times 3$$

$$\begin{aligned} \sqrt[3]{81} &= \sqrt[3]{\boxed{3 \times 3 \times 3} \times 3} \\ &= 3 \times \sqrt[3]{3} \\ &= 3\sqrt[3]{3} \end{aligned}$$

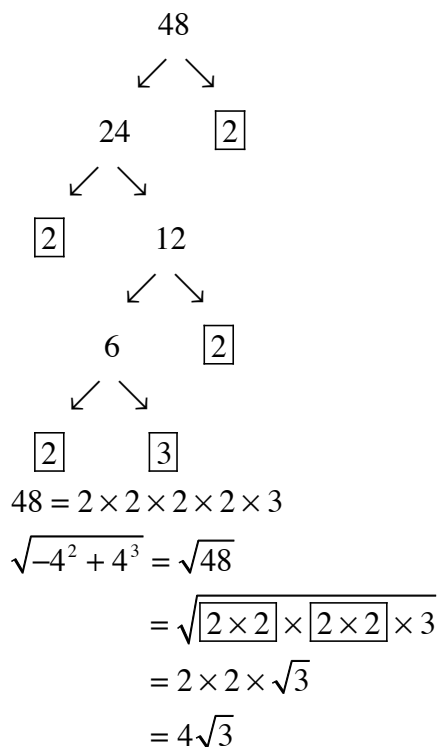
9. $\sqrt[3]{160}$



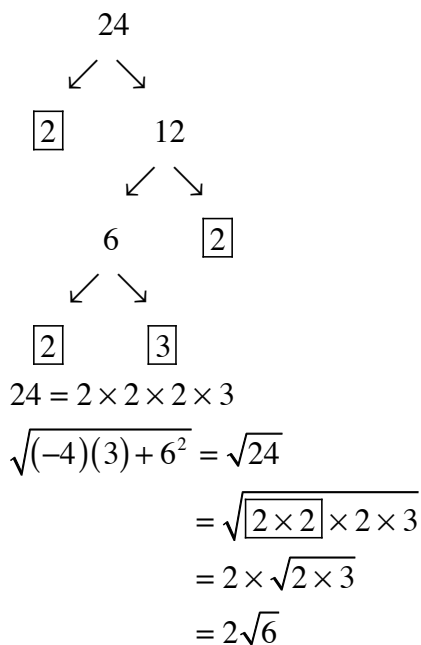
10. $\sqrt{945}$



11. $\sqrt{-4^2 + 4^3} = \sqrt{-16 + 64} = \sqrt{48}$



12. $\sqrt{(-4)(3) + 6^2} = \sqrt{-12 + 36} = \sqrt{24}$



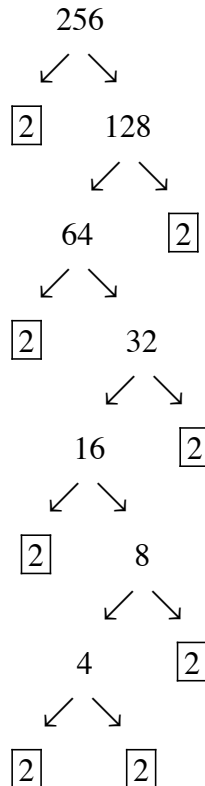
$$13. (\sqrt{4^2 + 3^2})^3 = (\sqrt{16+9})^3 = (\sqrt{25})^3 = 5^3$$

$$5^3 = 5 \times 5 \times 5 = 25 \times 5$$

$$\begin{array}{r} 25 \\ \times 5 \\ \hline 125 \end{array}$$

$$(\sqrt{4^2 + 3^2})^3 = 125$$

$$14. (\sqrt{64} + \sqrt{256})^2 = (8 + \sqrt{256})^2$$



$$256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$\sqrt{256} = \sqrt{\boxed{2 \times 2} \times \boxed{2 \times 2} \times \boxed{2 \times 2} \times \boxed{2 \times 2}}$$

$$\sqrt{256} = 2 \times 2 \times 2 \times 2$$

$$\sqrt{256} = 16$$

$$(\sqrt{64} + \sqrt{256})^2 = (8 + 16)^2 = 24^2$$

$$\begin{array}{r} 24 \\ \times 24 \\ \hline 96 \\ + 480 \\ \hline 576 \end{array}$$

$$(\sqrt{64} + \sqrt{256})^2 = 576$$

$$15. \sqrt{(-9)(-4) + (3^2)(5)} = \sqrt{36 + (9)(5)} = \sqrt{36 + 45} = \sqrt{81} = 9$$