

Outcome 2 - Calculating Roots

Bronze examples

Examples... ****Ask yourself, "what number do I square to get 16?"****

$$\sqrt{16} = 4 \quad (\text{since } 4 \times 4 = 16!)$$

$$\sqrt{49} = 7 \quad (\text{since } 7 \times 7 = 49!)$$

$$\sqrt{144} = 12 \quad (\text{since } 12 \times 12 = 144!)$$

Silver examples

Examples... ****Ask yourself, "what number do I square to get 1600?"****

$$\sqrt{1600} = 40 \quad (\text{since } 40 \times 40 = 1600!)$$

$$\sqrt{3600} = 60 \quad (\text{since } 60 \times 60 = 3600!)$$

$$\sqrt{810\,000} = 900 \quad (\text{since } 900 \times 900 = 810\,000!)$$

Gold examples

Shift **x** **3** **→** **64** **=**

$$\sqrt[3]{64} = 4 \quad (\text{since } 4 \times 4 \times 4 = 64!)$$

$$\sqrt[5]{1} = 1 \quad (\text{since } 1 \times 1 \times 1 \times 1 \times 1 = 1!)$$

$$\sqrt[4]{16} = 2 \quad (\text{since } 2 \times 2 \times 2 \times 2 = 16!)$$

Bronze Questions

Evaluate the following square roots...



- | | |
|--------------|--------------|
| $\sqrt{1}$ | $\sqrt{4}$ |
| $\sqrt{64}$ | $\sqrt{100}$ |
| $\sqrt{25}$ | $\sqrt{81}$ |
| $\sqrt{9}$ | $\sqrt{169}$ |
| $\sqrt{121}$ | $\sqrt{36}$ |

Silver Questions

Evaluate the following square roots...



- | | |
|-------------------|----------------------|
| $\sqrt{2500}$ | $\sqrt{4900}$ |
| $\sqrt{6400}$ | $\sqrt{8100}$ |
| $\sqrt{900}$ | $\sqrt{400}$ |
| $\sqrt{490\,000}$ | $\sqrt{360\,000}$ |
| $\sqrt{40\,000}$ | $\sqrt{4\,000\,000}$ |

Gold Questions

Evaluate the following roots...



- | | |
|---------------------|----------------------|
| $\sqrt[3]{216}$ | $\sqrt[3]{729}$ |
| $\sqrt[4]{6561}$ | $\sqrt[4]{81}$ |
| $\sqrt[5]{16\,807}$ | $\sqrt[5]{3125}$ |
| $\sqrt[6]{1}$ | $\sqrt[7]{279\,936}$ |
| $\sqrt[8]{1}$ | $\sqrt[9]{19\,683}$ |



Bronze Answers

- | | | | |
|----|----|-----|----|
| 1. | 1 | 2. | 2 |
| 3. | 8 | 4. | 10 |
| 5. | 5 | 6. | 9 |
| 7. | 3 | 8. | 13 |
| 9. | 11 | 10. | 6 |

Silver Answers

- | | | | |
|----|-----|-----|------|
| 1. | 50 | 2. | 70 |
| 3. | 80 | 4. | 90 |
| 5. | 30 | 6. | 20 |
| 7. | 700 | 8. | 600 |
| 9. | 200 | 10. | 2000 |

Gold Answers

- | | | | |
|----|---|-----|---|
| 1. | 6 | 2. | 9 |
| 3. | 9 | 4. | 3 |
| 5. | 7 | 6. | 5 |
| 7. | 6 | 8. | 2 |
| 9. | 1 | 10. | 3 |