# Outcome 1 - Multiplication & Division of Indices

Bronze examples...

When multiplying indices...you ADD the powers. Examples... Write each of the following in their  $a^m \times a^n = a^{m+n}$ simplest index form... When dividing indices...you SUBTRACT  $6x^9 \times 5x^2 = 30x^{11}$ the powers.  $a^m \div a^n = a^{m-n}$ 

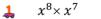
Silver examples

Examples... Write each of the following in their simplest index form... Multiply first... ...then divide! Gold examples

Examples... Write each of the following in their Multiply first... simplest index form... ...then divide!

## **Bronze Questions**

Write each of the following in their simplest index form...



$$a^6 \times a$$

$$\stackrel{\mathbf{3}}{\mathbf{4}}$$
  $5b^3 \times 7b^4$ 

$$5b^3 \times 7b^4$$
  $\Leftrightarrow$   $9p^4 \times 6p$ 

$$=$$
  $k^{12} \div k^3$   $=$ 

$$d^3 \div d^2$$

$$24y^{10} \div 8y^7$$

$$16r^{14} \div 2r^8$$

$$\frac{63h^6}{9h^5}$$

# Gold Questions

Write each of the following in their simplest index form...







$$4 \qquad \frac{p^{\frac{7}{11}} \times p^{\frac{18}{11}}}{p^{\frac{3}{11}}}$$

$$\frac{2k^{\frac{3}{8}} \times 8k^{\frac{13}{8}}}{4k}$$

$$\frac{2k^{\frac{3}{8}} \times 8k^{\frac{13}{8}}}{4k} \qquad \qquad \frac{6d^{\frac{17}{6}} \times 4d^{\frac{13}{6}}}{3d^{3}}$$

$$\frac{3}{2} \qquad \frac{8y^{\frac{7}{2}} \times 4y^{\frac{11}{2}}}{2y^2}$$

$$\frac{10r^{\frac{11}{4}} \times 4r^{\frac{25}{4}}}{8r^5}$$

# Silver Questions

Write each of the following in their simplest index form...



$$\frac{a^5 \times a^4}{a}$$

$$\frac{b^8 \times b}{b^3}$$

$$\frac{3k^4 \times 6k^8}{2k^3}$$

$$\frac{6d^9 \times 5d^2}{3d^5}$$

$$\frac{3y^3 \times 2y^4}{6y^5}$$

$$\frac{2r^2 \times 5r}{10r^6}$$

### Bronze Answers

- 1.  $x^{15}$
- 3.  $35b^7$
- k<sup>9</sup>
- 7.  $3y^3$
- 9.  $3c^2$

- 2. a<sup>8</sup>
- 4.  $54p^5$
- d
- 8.  $8r^6$
- 10. 7h

### Silver Answers

- 1.  $x^5$
- 3.  $b^6$
- 5.  $9k^9$
- 7.  $3y^2$
- 2. *a*<sup>8</sup>
- 4.  $p^7$
- 6.  $10d^6$
- **8**. 1

### Gold Answers

- 1.  $\boldsymbol{x}$
- 3.  $b^8$
- **5**. 4*k*
- 7.  $16y^7$
- 2.  $a^2$
- 4.  $p^2$
- 6.  $8d^2$
- 8.  $5r^4$