

Indices Test. Stage 5.3.Outcome: PAS 5.1.1, PAS 5.2.1

1. Express in simplest index form

a.  $4 \times 4 \times 4 \times 4 \times 4$

b.  $3 \times h \times 5 \times p \times h$

2. Write in expanded form

$7y^2 - 2d^4$

3. Simplify:

a.  $k^4 \times k^8$

b.  $5p^2 \times -3^5$

c.  $21c^9 \div 7c^5$

d.  $\frac{36z^{12}}{6z^8}$

e.  $(h^2)^4$

f.  $(4p^1)^2$

g.  $\frac{9d^{10} \times (2d^3)^3}{12d^{15}}$

h.  $10x^0$

i.  $(4x^3)^0$

j.  $9^{\frac{1}{2}}$

k.  $27^{\frac{-1}{3}}$

Name:

4. Express as a fraction in simplest form

a.  $5^{-3}$

b.  $9t^{-2}$

c.  $7e^{-1}f^{-5}g$

d.  $\left(\frac{m}{7}\right)^{-2}$

5. Simplify, giving your answer without any negative indices.

a.  $k^{-9} \times k^2$

b.  $r^{-12} \div r^{-6}$

c.  $(n^{-2})^5$

6. Evaluate using your calculator:

a.  $\sqrt[4]{1296}$

b.  $100000^{\frac{-1}{5}}$

c.  $8^{\frac{4}{3}}$

7. Express in scientific notation:

a.  $28\ 600$

b.  $0.000\ 583$

8. Write the basic numeral for:

a.  $6 \times 10^4$

b.  $4.61 \times 10^{-6}$

Indices Test. Stage 5.3.

Outcome: PAS 5.1.1, PAS 5.2.1

1. Express in simplest index form

a.  $4 \times 4 \times 4 \times 4 \times 4 = 4^5 \checkmark$

b.  $3 \times h \times 5 \times p \times h = 15h^2p \checkmark$

2. Write in expanded form

$7y^2 - 2d^4$   $((7 \times y \times y) - (2 \times d \times d \times d \times d))$

3. Simplify:

a.  $k^4 \times k^8 = k^{12} \checkmark$

b.  $5p^2 \times -3^5 = -1215p^2 \checkmark$

c.  $21c^9 \div 7c^5 = 3c^4 \checkmark$

d.  $\frac{36z^{12}}{6z^8} = 6z^4 \checkmark$

e.  $(h^2)^4 = h^8 \checkmark$

f.  $(4p^1)^2 = 16p^2 \checkmark$

g.  $\frac{9d^{10} \times (2d^3)^2}{12d^{15}} = \frac{9d^{10} \times 8d^6}{12d^{15}} = \frac{72d^{16}}{12d^{15}} = 6d \checkmark$

h.  $10x^0 = 10 \checkmark$

i.  $(4x^3)^0 = 1 \checkmark$

j.  $9^{\frac{1}{2}} = \sqrt{9} = 3 \checkmark$

k.  $27^{\frac{-1}{3}} = \frac{1}{\sqrt[3]{27}} = \frac{1}{3} \checkmark$

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4. Express as a fraction in simplest form

a.  $5^{-3} = \frac{1}{5^3} = \frac{1}{125} \checkmark$

b.  $9t^{-2} = \frac{9}{t^2} \checkmark$

c.  $7e^{-1}f^{-5}g^9 = \frac{7g^9}{ef^5} \checkmark$

d.  $\left(\frac{m}{7}\right)^{-2} = \frac{49}{m^2} \checkmark$

5. Simplify, giving your answer without any negative indices.

a.  $k^{-9} \times k^2 = \frac{k^2}{k^9} = \frac{1}{k^7} \checkmark$

b.  $r^{-12} \div r^{-6} = \frac{1}{r^{12}} \times r^6 = \frac{r^6}{r^{12}} = \frac{1}{r^6} \checkmark$

c.  $(n^{-2})^5 \cdot n^{-10} = \frac{1}{n^{10}} \checkmark$

6. Evaluate using your calculator:

a.  $\sqrt[4]{1296} = 6 \checkmark$

b.  $100000^{\frac{-1}{5}} = \frac{1}{\sqrt[5]{100000}} = \frac{1}{10} \checkmark$

c.  $8^{\frac{4}{3}} = \sqrt[3]{8^4} = 2^4 = 16 \checkmark$

7. Express in scientific notation:

a. 28 600 = ~~2.86 x 10^2~~  $2.86 \times 10^4 \checkmark$

b. 0.000 583 =  $5.83 \times 10^{-4} \checkmark$

8. Write the basic numeral for:

a.  $6 \times 10^4 = 60000 \checkmark$

b.  $4.61 \times 10^{-6} = 0.00000461 \checkmark$