



Standard index form Answers

Warm up

Simplify the following:

1. $a^5 \times a^2 = a^7$

2. $c^8 \div c^6 = c^2$

3. $(d^3)^5 = d^{15}$

Stage 1

Express the following in standard index form:

4. $850000 = 8.5 \times 10^5$

7. $750000 = 7.5 \times 10^5$

5. $2800 = 2.8 \times 10^3$

8. $94000 = 9.4 \times 10^4$

6. $16000 = 1.6 \times 10^4$

9. $102 = 1.02 \times 10^2$

Stage 2

Express the following in standard index form:

1. $0.000044 = 4.4 \times 10^{-5}$

4. $0.0000019 = 1.9 \times 10^{-6}$

2. $0.0000053 = 5.3 \times 10^{-6}$

5. $0.0000097 = 9.7 \times 10^{-6}$

3. $0.038 = 3.8 \times 10^{-2}$

6. $0.0045 = 4.5 \times 10^{-3}$

Stage 3

Express the following in standard index form:

1. $8400 = 8.4 \times 10^3$

4. $0.0000034 = 3.4 \times 10^{-6}$

2. $0.000018 = 1.8 \times 10^{-5}$

5. $0.0068 = 6.8 \times 10^{-3}$

3. $55000 = 5.5 \times 10^4$

6. $370000 = 3.7 \times 10^5$

Stage 4

Express the following as an ordinary number:

1. $6.6 \times 10^4 = 66000$

5. $2.6 \times 10^{-4} = 0.00026$

2. $0.043 \times 10^5 = 4300$

6. $9.8 \times 10^{-3} = 0.0098$

3. $9.1 \times 10^2 = 910$

7. $0.043 \times 10^5 = 4300$

4. $0.41 \times 10^{-2} = 0.0041$

8. $0.039 \times 10^{-7} = 0.000\ 000\ 003\ 9$

Stage 5

Each of the following numbers is **not** in proper standard index form.

Express the following in proper standard index form:

1. $0.57 \times 10^4 = \mathbf{5.7 \times 10^3}$

2. $0.71 \times 10^3 = \mathbf{7.1 \times 10^2}$

3. $0.28 \times 10^{-4} = \mathbf{2.8 \times 10^{-5}}$

4. $208 \times 10^{-9} = \mathbf{2.08 \times 10^{-7}}$

5. $55 \times 10^5 = \mathbf{5.5 \times 10^6}$

6. $712 \times 10^{-3} = \mathbf{7.12 \times 10^{-1}}$

7. $21 \times 10^{-7} = \mathbf{2.1 \times 10^{-6}}$

8. $0.068 \times 10^6 = \mathbf{6.8 \times 10^4}$

9. $53 \times 10^{-6} = \mathbf{5.3 \times 10^{-5}}$

10. $400 \times 10^{-9} = \mathbf{4 \times 10^{-7}}$

Stage 6

Calculate the following, giving your answer in standard index form.

1. $(6.3 \times 10^7) - (5 \times 10^5) = \mathbf{6.25 \times 10^7}$

2. $(4.8 \times 10^5) + (7 \times 10^2) = \mathbf{4.807 \times 10^5}$

3. $(3.7 \times 10^8) \times (5 \times 10^4) = \mathbf{1.85 \times 10^{13}}$

4. $(5.3 \times 10^6) + (10 \times 10^2) = \mathbf{5.301 \times 10^6}$

5. $(2 \times 10^6) \div (8 \times 10^3) = \mathbf{2.5 \times 10^2}$

6. $(4.4 \times 10^8) - (10 \times 10^4) = \mathbf{4.399 \times 10^8}$

7. $(6.5 \times 10^{-6}) \times (7 \times 10^{-9}) = \mathbf{4.55 \times 10^{-14}}$

8. $(7.2 \times 10^8) \div (4 \times 10^6) = \mathbf{1.8 \times 10^2}$

9. $(3.8 \times 10^5) \times (4 \times 10^{-4}) = \mathbf{1.52 \times 10^2}$

10. $(7.6 \times 10^7) - (5 \times 10^8) = \mathbf{-4.24 \times 10^8}$