Memory

Simplifying

$$\sqrt{500} = \sqrt{100} \times \sqrt{5} = 10\sqrt{5}$$
$$\sqrt{a} \times \sqrt{a} = a$$

Multiplying

$$\sqrt{3} \times \sqrt{5} = \sqrt{15}$$
$$2\sqrt{7} \times 3\sqrt{2} = 6\sqrt{14}$$

Dividing

$$\sqrt{15} \div \sqrt{3} = \sqrt{5}$$
$$18\sqrt{30} \div 3\sqrt{6} = 6\sqrt{5}$$

Adding and subtracting

$$3\sqrt{5} + 2\sqrt{5} = 7\sqrt{5}$$

ROK – (Retention of Knowledge)

Simplify
1) $\sqrt{24}$
2) $\sqrt{44}$
3) $\sqrt{45}$
4) $\sqrt{128}$

Multiply
1) $\sqrt{2} \times \sqrt{14}$
2) $\sqrt{5} \times \sqrt{8}$
3) $\sqrt{3} \times \sqrt{6}$
4) $\sqrt{10} \times \sqrt{8}$

Dividing
1) $\sqrt{18} \div \sqrt{3}$
2) $\sqrt{24} \div \sqrt{2}$
3) $\sqrt{48} \div \sqrt{3}$
4) $\sqrt{64} \div \sqrt{2}$

Addition and Subtraction
1) $\sqrt{8} + \sqrt{2}$
2) $\sqrt{20} - \sqrt{5}$
3) $\sqrt{3} + \sqrt{12}$
4) $\sqrt{8} - \sqrt{2}$

Stretch

Simplify the following surd

$$\frac{3}{\sqrt{2}} \times \frac{2}{\sqrt{4}}$$

Literacy

What is a rational number?

Skill 1 — Rationalise the denominator to make it a rational number

1) $\frac{3}{\sqrt{3}}$
2) $\frac{10}{\sqrt{5}}$
3) $\frac{21}{\sqrt{7}}$
4) $\frac{8}{\sqrt{2}}$

5) $\frac{24}{\sqrt{6}}$
6) $\frac{1}{\sqrt{3}}$
7) $\frac{1}{\sqrt{2}}$
8) $\frac{1}{\sqrt{5}}$

9) $\frac{2}{\sqrt{3}}$
10) $\frac{9}{\sqrt{15}}$
11) $\frac{21}{\sqrt{6}}$
12) $\frac{8}{\sqrt{18}}$

13) $\frac{2}{\sqrt{5}}$
14) $\frac{9}{\sqrt{6}}$
15) $\frac{30}{75}$
16) $\frac{\sqrt{12}}{\sqrt{50}}$

17) $\frac{\sqrt{12}}{\sqrt{3}}$
18) $\frac{3\sqrt{2}}{\sqrt{10}}$
19) $\frac{3\sqrt{7}}{\sqrt{21}}$
20) $\frac{4\sqrt{5}}{\sqrt{20}}$

Skill 3 — Rationalise the denominator to make it a rational number

1) $\frac{1}{\sqrt{5}+\sqrt{2}}$
2) $\frac{1}{\sqrt{3}-\sqrt{2}}$
3) $\frac{4}{\sqrt{7}+\sqrt{5}}$

4) $\frac{6}{\sqrt{13}-\sqrt{7}}$
5) $\frac{4}{\sqrt{5}+\sqrt{3}}$
6) $\frac{7}{\sqrt{3}+2}$

7) $\frac{4}{\sqrt{11}-3}$
8) $\frac{12}{\sqrt{7}+3}$
9) $\frac{6}{\sqrt{13}-2}$

Skill 2 — Expand the following brackets

1) $\sqrt{2}(\sqrt{3} + 4)$
2) $(\sqrt{3} + 4)(\sqrt{2} + 5)$
3) $(\sqrt{3} + 4)(\sqrt{3} + 4)$
4) $(\sqrt{3} + 4)(\sqrt{3} - 4)$

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Memory

Simplifying
$$\sqrt{500} = \sqrt{100} \times \sqrt{5} = 10\sqrt{5}$$
$$\sqrt{a} \times \sqrt{a} = a$$

Multiplying
$$\sqrt{3} \times \sqrt{5} = \sqrt{15}$$
$$2\sqrt{7} \times 3\sqrt{2} = 6\sqrt{14}$$

Dividing
$$\sqrt{15} \div \sqrt{3} = \sqrt{5}$$
$$18\sqrt{30} \div 3\sqrt{6} = 6\sqrt{5}$$

Adding and subtracting
$$3\sqrt{5} + 2\sqrt{5} = 7\sqrt{5}$$

ROK – (Retention of Knowledge)

Simplify	Answers	Multiply	Answers	Dividing	Answers	Addition and Subtraction	Answers
1) $\sqrt{24}$	1) $2\sqrt{6}$	1) $\sqrt{2} \times \sqrt{14}$	1) $2\sqrt{7}$	1) $\sqrt{18} \div \sqrt{3}$	1) $\sqrt{6}$	1) $\sqrt{8} + \sqrt{2}$	1) $3\sqrt{2}$
2) $\sqrt{44}$	2) $2\sqrt{11}$	2) $\sqrt{5} \times \sqrt{8}$	2) $2\sqrt{10}$	2) $\sqrt{24} \div \sqrt{2}$	2) $2\sqrt{3}$	2) $\sqrt{20} - \sqrt{5}$	2) $\sqrt{5}$
3) $\sqrt{45}$	3) $3\sqrt{5}$	3) $\sqrt{3} \times \sqrt{6}$	3) $3\sqrt{2}$	3) $\sqrt{48} \div \sqrt{3}$	3) 4	3) $\sqrt{3} + \sqrt{12}$	3) $3\sqrt{3}$
4) $\sqrt{128}$	4) $8\sqrt{2}$	4) $\sqrt{10} \times \sqrt{8}$	4) $4\sqrt{5}$	4) $\sqrt{64} \div \sqrt{2}$	4) $4\sqrt{2}$	4) $\sqrt{8} - \sqrt{2}$	4) $\sqrt{2}$

Stretch

Simplify the following surd
$$\frac{3}{\sqrt{2}} \times \frac{2}{\sqrt{4}}$$
$$\frac{6\sqrt{8}}{8} = \frac{12\sqrt{2}}{8} = 1\frac{\sqrt{2}}{2}$$

Literacy

What is a rational number?
A **Rational Number** is a real number that can be written as a simple fraction

Skill 1 — Rationalise the denominator to make it a rational number

1). $\sqrt{3}$	2). $2\sqrt{5}$	3). $3\sqrt{7}$	4). $4\sqrt{2}$	5). $4\sqrt{6}$
6). $\sqrt{3}/3$	7). $\sqrt{2}/2$	8). $\sqrt{5}/5$	9). $2\sqrt{3}/3$	10). $3\sqrt{15}/5$
11). $7\sqrt{6}/2$	12). $4\sqrt{2}/3$	13). $2\sqrt{5}/5$	14). $3\sqrt{6}/2$	15). $2\sqrt{3}$
16). $\sqrt{6}/5$	17). 2	18). $3\sqrt{5}/5$	19). $\sqrt{3}$	20). 2

Skill 3 — Rationalise the denominator to make it a rational number

21). $(\sqrt{5} - \sqrt{2})/3$	22). $\sqrt{3} + \sqrt{2}$	23). $2\sqrt{7} - 2\sqrt{5}$	24). $\sqrt{13} + \sqrt{7}$	25). $2\sqrt{5} - 2\sqrt{3}$
26). $\sqrt{3} - 2$	27). $2\sqrt{11} + 6$	28). $-6\sqrt{7} + 18$	29). $(2\sqrt{13} + 4)/3$	30). $\sqrt{6}$

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Skill 2 — Expand the following brackets

1) $\sqrt{2}(\sqrt{3} + 4)$
$(\sqrt{6} + 4\sqrt{2})$

2) $(\sqrt{3} + 4)(\sqrt{2} + 5)$
$(\sqrt{6} + +5\sqrt{3} + 4\sqrt{2} + 20)$

3) $(\sqrt{3} + 4)(\sqrt{3} + 4)$
$(3 + 4\sqrt{3} + 4\sqrt{3} + 16)$
$19 + 8\sqrt{3}$

4) $(\sqrt{3} + 4)(\sqrt{3} - 4)$
$(3 + 4\sqrt{3} - 4\sqrt{3} + 16)$
19