

11. [Square Roots / Radicals]

Skill 11.1 Calculating square roots of perfect squares.

MMMaive 1 1 2 2 3 3 4 4
MMLime 1 1 2 2 3 3 4 4

- Estimate which number, multiplied by itself, produces the number under the square root sign.
- Check your estimation by multiplying your guess by itself.

Hint: Calculating the square root is the opposite to squaring.

Q. $\sqrt{400} =$

A. $\sqrt{400} =$
 $= \sqrt{20 \times 20}$
 $= 20$

a) $\sqrt{25} =$

$= \sqrt{5 \times 5} = \boxed{5}$

b) $\sqrt{4} =$

$= \dots = \boxed{}$

c) $\sqrt{81} =$

$= \dots = \boxed{}$

d) $\sqrt{100} =$

$= \dots = \boxed{}$

e) $\sqrt{64} =$

$= \dots = \boxed{}$

f) $\sqrt{169} =$

$= \dots = \boxed{}$

g) $\sqrt{121} =$

$= \dots = \boxed{}$

h) $\sqrt{1} =$

$= \dots = \boxed{}$

i) $\sqrt{1600} =$

$= \dots = \boxed{}$

j) $\sqrt{9} =$

$= \dots = \boxed{}$

k) $\sqrt{144} =$

$= \dots = \boxed{}$

l) $\sqrt{6400} =$

$= \dots = \boxed{}$

m) $\sqrt{256} =$

$= \dots = \boxed{}$

n) $\sqrt{225} =$

$= \dots = \boxed{}$

o) $\sqrt{10,000} =$

$= \dots = \boxed{}$

Skill 11.2 Calculating square roots of perfect squares in fraction form.

MMMaive 1 2 2 3 3 4 4
MMLime 1 1 2 2 3 3 4 4

- If the number is a mixed number, convert it to an improper fraction first.
- Estimate which number multiplied by itself produces the numerator.
- Estimate which number multiplied by itself produces the denominator.
- Check your estimation by multiplying your guess by itself.

Hint: Calculating the square root is the opposite to squaring.

Q. $\sqrt{5\frac{4}{9}} =$

A. $\sqrt{5\frac{4}{9}} =$

$$= \sqrt{\frac{5 \times 9 + 4}{9}}$$

Change the mixed number to an improper fraction

$$= \sqrt{\frac{49}{9}} = \frac{\sqrt{49}}{\sqrt{9}} = \frac{\sqrt{7 \times 7}}{\sqrt{3 \times 3}}$$

Find the square root of the numerator and the denominator

$$= \frac{7}{3} = 2\frac{1}{3}$$

a) $\sqrt{\frac{1}{36}} =$

$$= \sqrt{\frac{1}{6} \times \frac{1}{6}}$$

$$= \boxed{\frac{1}{6}}$$

b) $\sqrt{\frac{1}{16}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

c) $\sqrt{\frac{4}{25}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

d) $\sqrt{\frac{100}{144}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

e) $\sqrt{\frac{16}{121}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

f) $\sqrt{\frac{25}{81}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

g) $\sqrt{1\frac{7}{9}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

h) $\sqrt{2\frac{1}{4}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

i) $\sqrt{1\frac{11}{25}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

j) $\sqrt{20\frac{1}{4}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

k) $\sqrt{1\frac{17}{64}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

l) $\sqrt{3\frac{1}{16}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

m) $\sqrt{11\frac{1}{9}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

n) $\sqrt{1\frac{15}{49}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

o) $\sqrt{4\frac{21}{25}} =$

$$= \dots = \boxed{\phantom{\frac{1}{6}}}$$

Skill 11.3 Calculating square roots of perfect squares in decimal form.

- Find the square root. (see skill 11.1, page 123)
- Consider the position of the decimal point.

Q. $\sqrt{0.04} =$

A. $\sqrt{0.04} =$
 $= \sqrt{0.2 \times 0.2}$
 $= 0.2$

a) $\sqrt{0.25} =$

$= 0.5 \times 0.5 =$

b) $\sqrt{0.16} =$

$=$

c) $\sqrt{1.44} =$

$=$

d) $\sqrt{0.01} =$

$=$

e) $\sqrt{0.49} =$

$=$

f) $\sqrt{1.69} =$

$=$

g) $\sqrt{0.36} =$

$=$

h) $\sqrt{4.41} =$

$=$

i) $\sqrt{0.25} =$

$=$

j) $\sqrt{0.64} =$

$=$

k) $\sqrt{1.96} =$

$=$

l) $\sqrt{2.56} =$

$=$

m) $\sqrt{6.25} =$

$=$

n) $\sqrt{0.81} =$

$=$

o) $\sqrt{1.21} =$

$=$

p) $\sqrt{0.09} =$

$=$

q) $\sqrt{2.25} =$

$=$

r) $\sqrt{5.76} =$

$=$

Skill 11.4 Multiplying integers with square roots of perfect squares.

- Find the square root. (see skill 11.1, page 123)
- Multiply the whole numbers.

Q. $3\sqrt{81} =$

A. $3\sqrt{81} =$
 $= 3 \times \sqrt{9 \times 9}$
 $= 3 \times 9$
 $= 27$

a) $2\sqrt{64} =$

$= 2 \times \sqrt{8 \times 8}$

$= 2 \times 8$

$=$

b) $4\sqrt{9} =$

$=$

$=$

$=$

c) $3\sqrt{16} =$

$=$

$=$

$=$

d) $2\sqrt{49} =$

$=$

$=$

$=$

e) $4\sqrt{25} =$

$=$

$=$

$=$

f) $2\sqrt{144} =$

$=$

$=$

$=$

g) $6\sqrt{100} =$

$=$

$=$

$=$

h) $7\sqrt{36} =$

$=$

$=$

$=$

i) $4\sqrt{64} =$

$=$

$=$

$=$

j) $2\sqrt{169} =$

$=$

$=$

$=$

k) $2\sqrt{900} =$

$=$

$=$

$=$

l) $5\sqrt{121} =$

$=$

$=$

$=$

m) $3\sqrt{400} =$

$=$

$=$

$=$

n) $6\sqrt{2500} =$

$=$

$=$

$=$

o) $10\sqrt{0.25} =$

$=$

$=$

$=$

p) $4\sqrt{225} =$

$=$

$=$

$=$

q) $5\sqrt{1600} =$

$=$

$=$

$=$

r) $2\sqrt{625} =$

$=$

$=$

$=$

Skill 11.5 Multiplying square roots of perfect squares.

- Find the square roots. (see skill 11.1, page 123)
- Multiply the whole numbers.

$$\sqrt{9} \times \sqrt{9} = \sqrt{9 \times 9} = 9$$

The square root of any number multiplied by itself equals the number

Q. $2\sqrt{49} \times \sqrt{49} =$

A. $2\sqrt{49} \times \sqrt{49} =$
 $= 2 \times 49$
 $= 98$

a) $\sqrt{36} \times \sqrt{36} =$

36

b) $\sqrt{7} \times \sqrt{7} =$

c) $\sqrt{25} \times \sqrt{25} =$

d) $\sqrt{81} \times \sqrt{25} =$

$= 9 \times 5$

=

45

e) $\sqrt{16} \times \sqrt{9} =$

=

=

f) $\sqrt{49} \times \sqrt{64} =$

=

=

g) $\sqrt{121} \times 3\sqrt{9} =$

=

=

h) $\sqrt{16} \times \sqrt{100} =$

=

=

i) $\sqrt{36} \times 4\sqrt{25} =$

=

=

j) $\sqrt{9} \times 2\sqrt{49} =$

=

=

k) $\sqrt{144} \times 4\sqrt{4} =$

=

=

l) $2\sqrt{36} \times \sqrt{25} =$

=

=

m) $2\sqrt{25} \times \sqrt{64} =$

=

=

n) $\sqrt{169} \times 2\sqrt{9} =$

=

=

o) $2\sqrt{4} \times 3\sqrt{121} =$

=

=

p) $5\sqrt{16} \times \sqrt{81} =$

=

=

q) $\sqrt{100} \times 8\sqrt{4} =$

=

=

r) $4\sqrt{9} \times 2\sqrt{100} =$

=

=

s) $3\sqrt{64} \times 2\sqrt{49} =$

=

=

t) $5\sqrt{36} \times 2\sqrt{144} =$

=

=

u) $9\sqrt{9} \times 4\sqrt{400} =$

=

=

Skill 11.6 Dividing square roots of perfect squares.

- Find the square roots.
(see skill 11.1, page 123)
- Divide the whole numbers.

The square root of any number divided by itself equals 1

$$\frac{\sqrt{9}}{\sqrt{9}} = \sqrt{9} \div \sqrt{9} = 1$$

Q. $\frac{\sqrt{81}}{\sqrt{9}} =$

A. $\frac{\sqrt{81}}{\sqrt{9}} =$
 $\frac{9}{3}$
 $= 3$

Find the square root of the numerator and the denominator

a) $\sqrt{64} \div \sqrt{16} =$

$= 8 \div 4$

$=$

b) $\sqrt{100} \div \sqrt{25} =$

$=$

$=$

c) $\sqrt{36} \div \sqrt{9} =$

$=$

$=$

d) $\sqrt{900} \div \sqrt{36} =$

$=$

$=$

e) $\sqrt{144} \div \sqrt{4} =$

$=$

$=$

f) $\sqrt{196} \div \sqrt{49} =$

$=$

$=$

g) $\frac{\sqrt{400}}{\sqrt{16}} =$

$=$

$=$

h) $\frac{\sqrt{144}}{\sqrt{9}} =$

$=$

$=$

i) $\frac{\sqrt{900}}{\sqrt{25}} =$

$=$

$=$

j) $8\sqrt{4} \div 2\sqrt{4} =$

$= (8 \times 2) \div (2 \times 2)$

$= 16 \div 4$

$=$

k) $4\sqrt{100} \div 2\sqrt{25} =$

$=$

$=$

l) $4\sqrt{900} \div 2\sqrt{9} =$

$=$

$=$

m) $\frac{4\sqrt{9}}{\sqrt{9}} =$

$=$

$=$

n) $\frac{2\sqrt{400}}{\sqrt{4}} =$

$=$

$=$

o) $\frac{3\sqrt{25}}{\sqrt{9}} =$

$=$

$=$

p) $\frac{2\sqrt{100}}{\sqrt{25}} =$

$=$

$=$

q) $\frac{5\sqrt{64}}{\sqrt{16}} =$

$=$

$=$

r) $\frac{4\sqrt{36}}{2\sqrt{4}} =$

$=$

$=$

Skill 11.7 Adding and subtracting square roots of perfect squares.

- Find the square roots. (see skill 11.1, page 123)
- Add or subtract the whole numbers.

Hint: Square roots that are not alike cannot be added or subtracted.

$$\sqrt{16} + \sqrt{4} \neq \sqrt{16 + 4}$$

$$4 + 2 \neq \sqrt{20}$$

$$\sqrt{16} - \sqrt{4} \neq \sqrt{16 - 4}$$

$$4 - 2 \neq \sqrt{12}$$

Q. $\sqrt{25} + \sqrt{25} + \sqrt{25} + \sqrt{25} = \sqrt{100}$
True or false?

A. $\sqrt{25} + \sqrt{25} + \sqrt{25} + \sqrt{25} = \sqrt{100}$
 $5 + 5 + 5 + 5 = 10$
 $20 = 10$
false

a) $\sqrt{64} - \sqrt{9} =$

$= 8 - 3 =$

b) $\sqrt{100} + \sqrt{36} =$

$=$

c) $\sqrt{25} + \sqrt{49} =$

$=$

d) $\sqrt{196} - \sqrt{49} =$

$=$

e) $\sqrt{144} - \sqrt{64} =$

$=$

f) $\sqrt{81} + \sqrt{121} =$

$=$

g) $\sqrt{25} + \sqrt{100} =$

$=$

h) $\sqrt{36} + \sqrt{64} =$

$=$

i) $\sqrt{49} - \sqrt{25} =$

$=$

j) $\sqrt{400} - \sqrt{81} =$

$=$

k) $\sqrt{121} - \sqrt{100} =$

$=$

l) $\sqrt{169} - \sqrt{144} =$

$=$

m) $\sqrt{169} - \sqrt{25} = \sqrt{144}$
True or false?

$=$

n) $\sqrt{4} + \sqrt{4} = \sqrt{9}$
True or false?

$=$

o) $\sqrt{64} + \sqrt{36} = \sqrt{100}$
True or false?

$=$

p) $\sqrt{64} - \sqrt{25} = \sqrt{9}$
True or false?

$=$

q) $\sqrt{100} - \sqrt{36} = \sqrt{64}$
True or false?

$=$

r) $\sqrt{9} + \sqrt{9} + \sqrt{9} + \sqrt{9} = \sqrt{36}$
True or false?

$=$

Skill 11.8 Estimating square roots.

- Find the perfect squares greater than ($>$) and less than ($<$) the number.

Q. Between which two consecutive whole numbers does $\sqrt{8}$ lie?

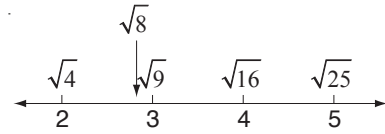
A. $4 < 8 < 9$

$\sqrt{4} < \sqrt{8} < \sqrt{9}$

$\sqrt{4} = 2$

$\sqrt{9} = 3$

$2 < \sqrt{8} < 3$



The answer is **2 & 3**

a) Between which two consecutive whole numbers does $\sqrt{72}$ lie?

$\sqrt{64} = 8$ $\sqrt{81} = 9$

8 & 9

b) Between which two consecutive whole numbers does $\sqrt{10}$ lie?

&

c) Between which two consecutive whole numbers does $\sqrt{5}$ lie?

&

d) Between which two consecutive whole numbers does $\sqrt{60}$ lie?

&

e) Between which two consecutive whole numbers does $\sqrt{34}$ lie?

&

f) Between which two consecutive whole numbers does $\sqrt{24}$ lie?

&

g) Between which two consecutive whole numbers does $\sqrt{80}$ lie?

&

h) Between which two consecutive whole numbers does $\sqrt{145}$ lie?

&

i) Between which two consecutive whole numbers does $\sqrt{99}$ lie?

&

j) Between which two consecutive whole numbers does $\sqrt{138}$ lie?

&

Skill 11.9 Multiplying radicals.

MMMaue 11 22 33 44
MMLime 11 22 33 44

- Multiply the whole numbers outside the square roots.
- Multiply the whole numbers inside the square roots.
- Find the square root of the perfect square.
- Multiply the results.

$$\sqrt{a} \times \sqrt{b} = \sqrt{a \times b} \quad \text{and} \quad m\sqrt{p} \times n\sqrt{q} = mn\sqrt{pq}$$

$$\sqrt{8} \times \sqrt{8} = \sqrt{8 \times 8} = 8$$

The square root of any number multiplied by itself equals the number

Q. $4\sqrt{2} \times \sqrt{32} =$

A. $4\sqrt{2} \times \sqrt{32} =$
 $= 4\sqrt{2 \times 32}$
 $= 4\sqrt{64}$
 $= 4 \times 8$
 $= 32$

a) $4\sqrt{5} \times 5\sqrt{5} =$

$$= 4 \times 5 \times \sqrt{5 \times 5}$$

$$= 20 \times 5$$

$$= \boxed{100}$$

b) $2\sqrt{3} \times \sqrt{3} =$

$$=$$

$$=$$

$$= \boxed{}$$

c) $2\sqrt{2} \times 5\sqrt{2} =$

$$=$$

$$=$$

$$= \boxed{}$$

d) $2\sqrt{7} \times \sqrt{7} =$

$$=$$

$$=$$

$$= \boxed{}$$

e) $\sqrt{3} \times 3\sqrt{3} =$

$$=$$

$$=$$

$$= \boxed{}$$

f) $4\sqrt{6} \times 3\sqrt{6} =$

$$=$$

$$=$$

$$= \boxed{}$$

g) $\sqrt{8} \times \sqrt{2} =$

$$=$$

$$=$$

$$= \boxed{}$$

h) $\sqrt{48} \times \sqrt{3} =$

$$=$$

$$=$$

$$= \boxed{}$$

i) $\sqrt{2} \times 5\sqrt{18} =$

$$=$$

$$=$$

$$= \boxed{}$$

j) $2\sqrt{3} \times \sqrt{27} =$

$$=$$

$$=$$

$$= \boxed{}$$

k) $7\sqrt{20} \times \sqrt{5} =$

$$=$$

$$=$$

$$= \boxed{}$$

l) $\sqrt{24} \times 2\sqrt{6} =$

$$=$$

$$=$$

$$= \boxed{}$$

m) $\sqrt{32} \times 2\sqrt{2} =$

$$=$$

$$=$$

$$= \boxed{}$$

n) $2\sqrt{12} \times \sqrt{3} =$

$$=$$

$$=$$

$$= \boxed{}$$

o) $2\sqrt{6} \times \sqrt{54} =$

$$=$$

$$=$$

$$= \boxed{}$$

Skill 11.10 Dividing radicals.

- Divide the whole numbers outside the square roots.
- Divide the whole numbers inside the square roots.
- Find the square root of the perfect square.
- Multiply the results.

$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}} \quad \text{and} \quad \frac{m\sqrt{p}}{n\sqrt{q}} = \frac{m}{n} \times \sqrt{\frac{p}{q}}$$

$$\sqrt{8} \div \sqrt{8} = \sqrt{8 \div 8} = \sqrt{1} = 1$$

The square root of any number divided by itself equals 1

Q. $\frac{10\sqrt{54}}{5\sqrt{6}} =$

A. $\frac{10\sqrt{54}}{5\sqrt{6}} =$
 $= \frac{10}{5} \times \sqrt{\frac{54}{6}}$
 $= 2 \times \sqrt{9}$
 $= 2 \times 3 = 6$

a) $\sqrt{18} \div \sqrt{2} =$
 $= \sqrt{18 \div 2}$
 $= \sqrt{9} = \boxed{}$

b) $6\sqrt{13} \div 2\sqrt{13} =$
 $= $
 $= = \boxed{}$

c) $\sqrt{8} \div \sqrt{2} =$
 $= $
 $= = \boxed{}$

d) $4\sqrt{72} \div 2\sqrt{2} =$
 $= 4 \div 2 \times \sqrt{72 \div 2}$
 $= 2 \times \sqrt{36}$
 $= 2 \times 6 = \boxed{}$

e) $6\sqrt{45} \div 3\sqrt{5} =$
 $= $
 $= = \boxed{}$

f) $10\sqrt{63} \div 2\sqrt{7} =$
 $= $
 $= = \boxed{}$

g) $\frac{4\sqrt{8}}{2\sqrt{8}} =$
 $= $
 $= = \boxed{}$

h) $\frac{4\sqrt{32}}{\sqrt{2}} =$
 $= $
 $= = \boxed{}$

i) $\frac{2\sqrt{48}}{\sqrt{3}} =$
 $= $
 $= = \boxed{}$

j) $\frac{9\sqrt{80}}{3\sqrt{5}} =$
 $= $
 $= = \boxed{}$

k) $\frac{14\sqrt{27}}{7\sqrt{3}} =$
 $= $
 $= = \boxed{}$

l) $\frac{8\sqrt{125}}{2\sqrt{5}} =$
 $= $
 $= = \boxed{}$

Skill 11.11 Simplifying radicals to simplest form.

- Find two factors of the whole number, one of which must be a perfect square.
- Write the radical as a product of two radicals.
- Find the square root of the perfect square.
- Leave the second radical unchanged.

Q. Simplify $\sqrt{500}$

A. $\sqrt{500}$
 $= \sqrt{100 \times 5}$
 $= \sqrt{100} \times \sqrt{5}$
 $= 10\sqrt{5}$

a) Simplify $\sqrt{45}$

$= \sqrt{9 \times 5}$
 $= \sqrt{9} \times \sqrt{5} = \boxed{3\sqrt{5}}$

b) Simplify $\sqrt{8}$

$=$
 $=$ $\boxed{}$

c) Simplify $\sqrt{28}$

$=$
 $=$ $\boxed{}$

d) Simplify $\sqrt{18}$

$=$
 $=$ $\boxed{}$

e) Simplify $\sqrt{12}$

$=$
 $=$ $\boxed{}$

f) Simplify $\sqrt{75}$

$=$
 $=$ $\boxed{}$

g) Simplify $\sqrt{32}$

$=$
 $=$ $\boxed{}$

h) Simplify $\sqrt{48}$

$=$
 $=$ $\boxed{}$

i) Simplify $\sqrt{63}$

$=$
 $=$ $\boxed{}$

j) Simplify $\sqrt{300}$

$=$
 $=$ $\boxed{}$

k) Simplify $\sqrt{125}$

$=$
 $=$ $\boxed{}$

l) Simplify $\sqrt{108}$

$=$
 $=$ $\boxed{}$

m) Simplify $\sqrt{80}$

$=$
 $=$ $\boxed{}$

n) Simplify $\sqrt{50}$

$=$
 $=$ $\boxed{}$

o) Simplify $\sqrt{84}$

$=$
 $=$ $\boxed{}$

p) Simplify $\sqrt{90}$

$=$
 $=$ $\boxed{}$

q) Simplify $\sqrt{500}$

$=$
 $=$ $\boxed{}$

r) Simplify $\sqrt{120}$

$=$
 $=$ $\boxed{}$

Skill 11.12 Adding and subtracting radicals.

- Add and subtract only terms that contain the same radicals.

Hint:

Same

Different

$$\sqrt{8} + \sqrt{8} = 2\sqrt{8}$$

$$\sqrt{8} + \sqrt{5} \neq \sqrt{13}$$

- Where necessary, simplify the radical. (see skill 11.11, page 133)

Q. $3\sqrt{32} - \sqrt{50} =$

A. $3\sqrt{32} - \sqrt{50} =$
 $= 3\sqrt{16 \times 2} - \sqrt{25 \times 2}$
 $= 3 \times \sqrt{16} \times \sqrt{2} - \sqrt{25} \times \sqrt{2}$
 $= 12\sqrt{2} - 5\sqrt{2}$
 $= 7\sqrt{2}$

a) $5\sqrt{13} + \sqrt{13} =$

$6\sqrt{13}$

b) $4\sqrt{6} + 3\sqrt{6} =$

c) $7\sqrt{2} - 3\sqrt{2} =$

d) $\sqrt{3} + 8\sqrt{3} =$

e) $4\sqrt{5} + 7\sqrt{5} =$

f) $15\sqrt{7} - 7\sqrt{7} =$

g) $2\sqrt{50} - \sqrt{18} =$

$= 2\sqrt{25 \times 2} - \sqrt{9 \times 2}$

$= 2 \times \sqrt{25} \times \sqrt{2} - \sqrt{9} \times \sqrt{2}$

$= 10\sqrt{2} - 3\sqrt{2} = 7\sqrt{2}$

h) $\sqrt{8} + \sqrt{2} =$

$=$

$=$

$=$

i) $\sqrt{2} + 5\sqrt{18} =$

$=$

$=$

$=$

j) $\sqrt{125} - \sqrt{45} =$

$=$

$=$

$=$

k) $\sqrt{27} + 5\sqrt{12} =$

$=$

$=$

$=$

l) $\sqrt{8} + 2\sqrt{18} =$

$=$

$=$

$=$

m) $\sqrt{300} - 2\sqrt{12} =$

$=$

$=$

$=$

n) $4\sqrt{54} - 3\sqrt{24} =$

$=$

$=$

$=$

o) $3\sqrt{200} + 2\sqrt{18} =$

$=$

$=$

$=$

Skill 11.13 Simplifying expressions with radicals.

- Use rules for the multiplication and division of radicals.
(see skill 11.9, page 131 and skill 11.10, page 132)
- Where necessary, simplify the radical. (see skill 11.11, page 133)

Hint: When multiplying and dividing radicals the same rules apply as for normal numbers.

$$\sqrt{a} \times \sqrt{b} = \sqrt{a \times b}$$

$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$$

Q. Evaluate $\frac{\sqrt{14} \times \sqrt{6}}{\sqrt{7}}$

A. $\frac{\sqrt{14} \times \sqrt{6}}{\sqrt{7}} =$
 $= \frac{\sqrt{14 \times 6}}{\sqrt{7}}$
 $= \sqrt{\frac{84}{7}}$
 $= \sqrt{12}$
 $= 2\sqrt{3}$

a) Evaluate $\frac{\sqrt{3} \times \sqrt{24}}{\sqrt{2}}$
 $= \frac{\sqrt{3 \times 24}}{\sqrt{2}}$

$= \sqrt{\frac{72}{2}} = \sqrt{36} = \boxed{6}$

b) Evaluate $\frac{\sqrt{15} \times \sqrt{3}}{\sqrt{5}}$
 $=$

$=$ $=$ $= \boxed{}$

c) Evaluate $\frac{\sqrt{14} \times \sqrt{2}}{\sqrt{7}}$
 $=$

$=$ $=$ $= \boxed{}$

d) Evaluate $\frac{\sqrt{100} \times \sqrt{2}}{\sqrt{8}}$
 $=$

$=$ $=$ $= \boxed{}$

e) Evaluate $\frac{\sqrt{4} \times \sqrt{28}}{\sqrt{7}}$
 $=$

$=$ $=$ $= \boxed{}$

f) Evaluate $\frac{3\sqrt{12} \times \sqrt{6}}{\sqrt{8}}$
 $=$

$=$ $=$ $= \boxed{}$

g) Evaluate $\frac{5\sqrt{18} \times \sqrt{2}}{\sqrt{36}}$
 $=$

$=$ $=$ $= \boxed{}$

h) Evaluate $\frac{\sqrt{5} \times \sqrt{8}}{\sqrt{2}}$
 $=$

$=$ $=$ $= \boxed{}$

i) Evaluate $\frac{2\sqrt{6} \times \sqrt{8}}{\sqrt{3}}$
 $=$

$=$ $=$ $= \boxed{}$