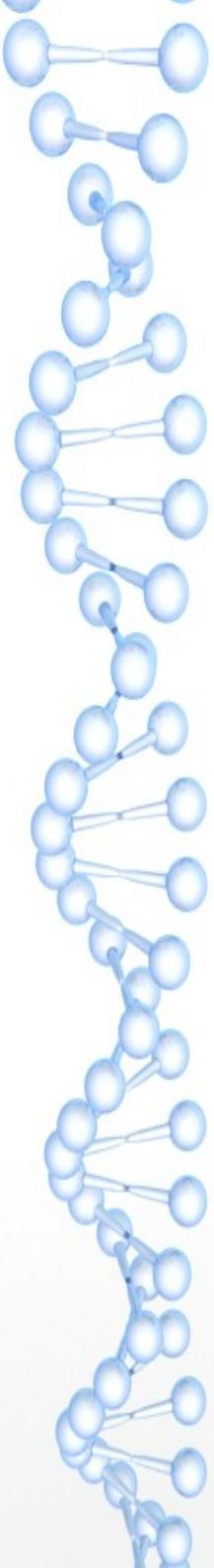


What if numbers could have
negative digits?

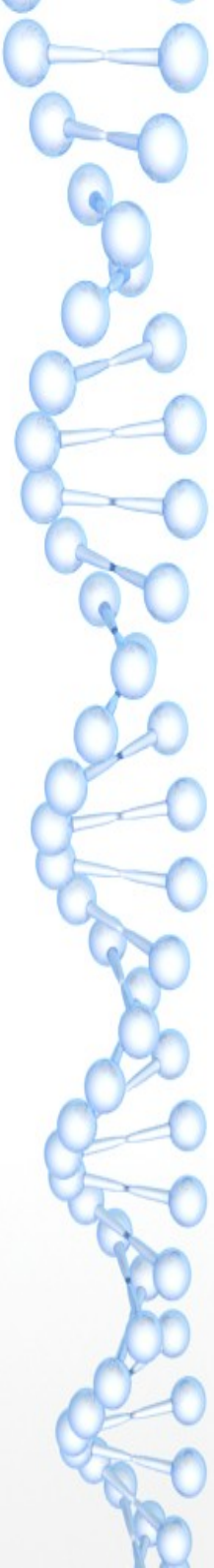


Smaller digits

19

+27

=??



Smaller digits


$$\begin{array}{r} 19 \\ +27 \\ =?? \end{array}$$

$$\begin{array}{r} 21 \\ +33 \\ = \end{array}$$

Smaller digits

19

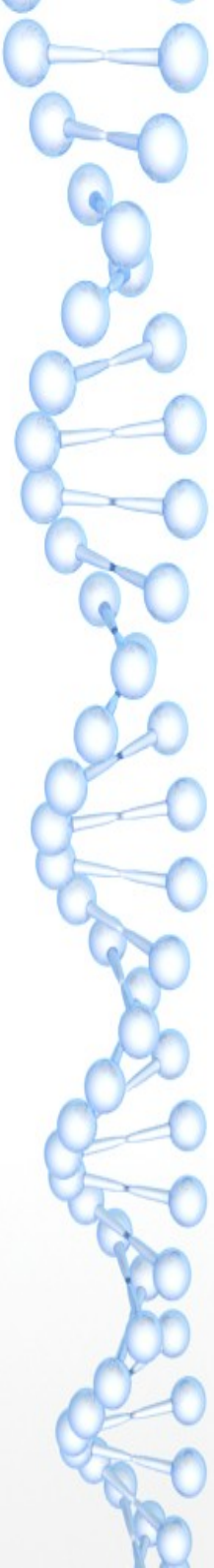
+27

=??

21

+33

=54



Smaller digits

19

+27

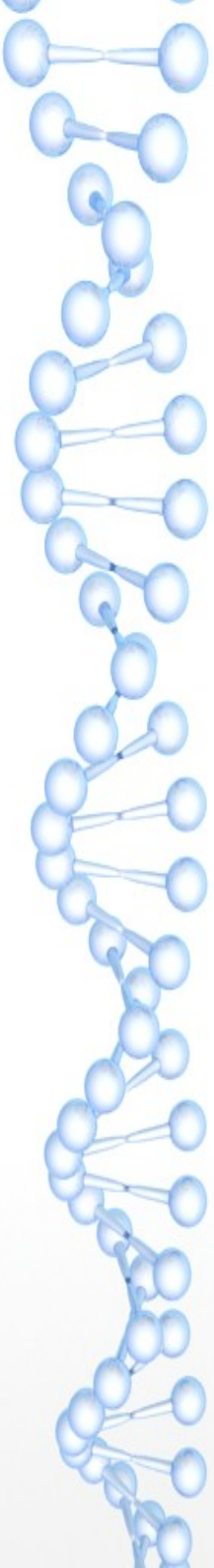
=??

21

+33

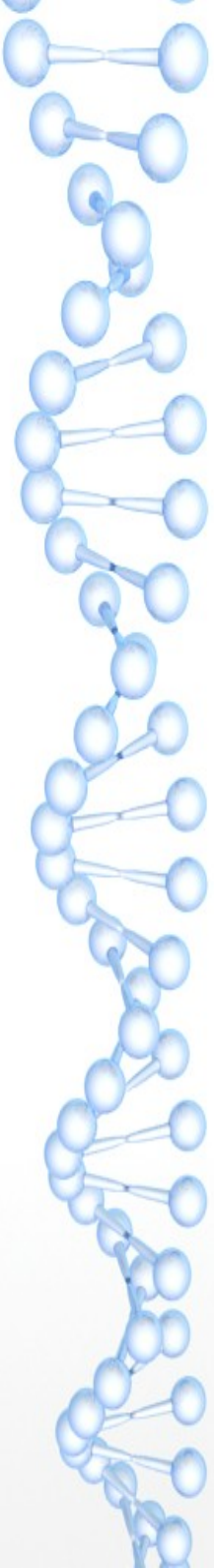
=54

=46

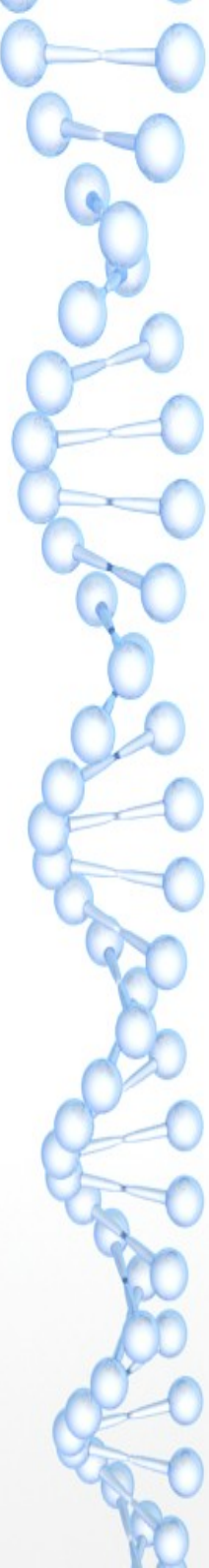


Multiplication

$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

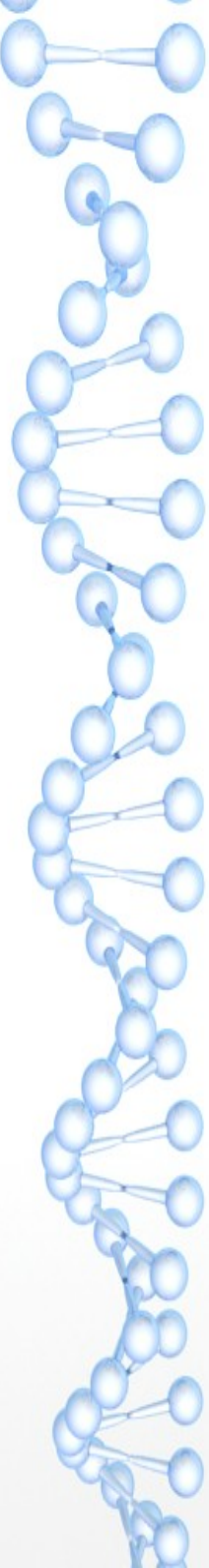


Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

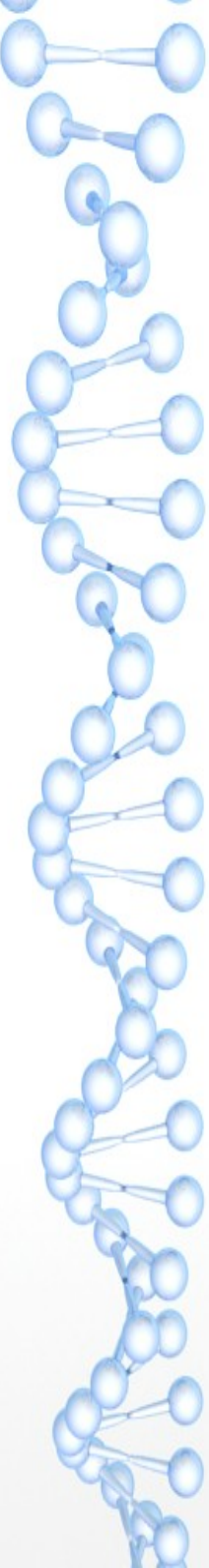
$$\begin{array}{r} 111 \\ \times 133 \\ \hline \end{array}$$

Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

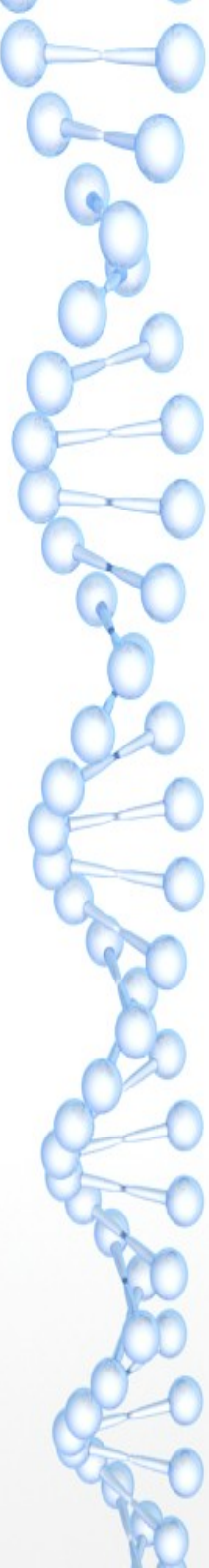
$$\begin{array}{r} 111 \\ \times 133 \\ \hline 3 \end{array}$$

Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

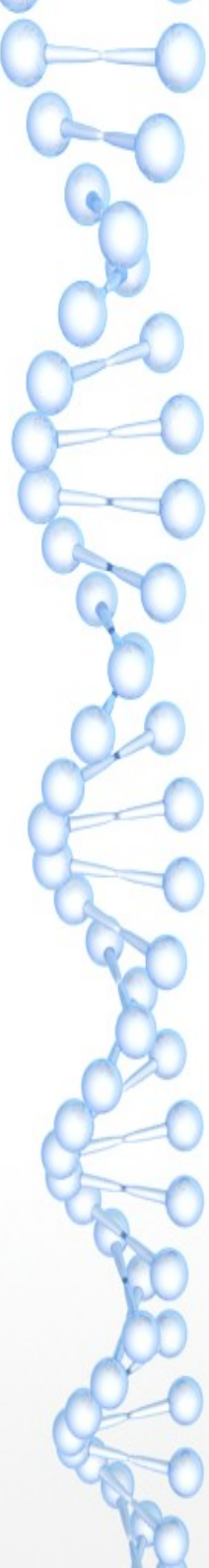
$$\begin{array}{r} 111 \\ \times 133 \\ \hline 03 \end{array}$$

Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

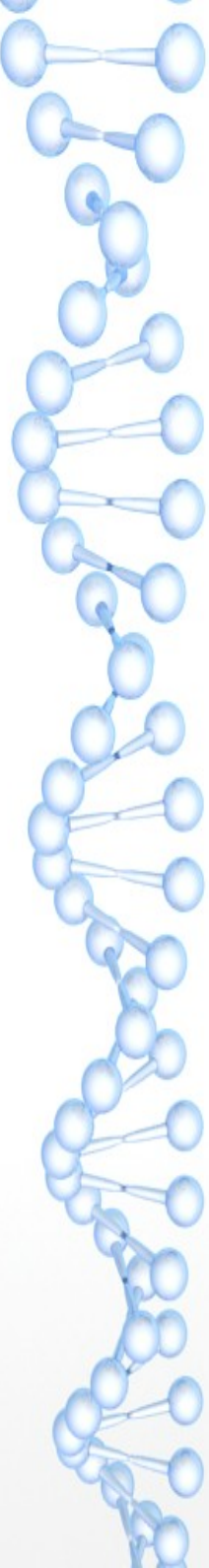
$$\begin{array}{r} 111 \\ \times 133 \\ \hline = 503 \end{array}$$

Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

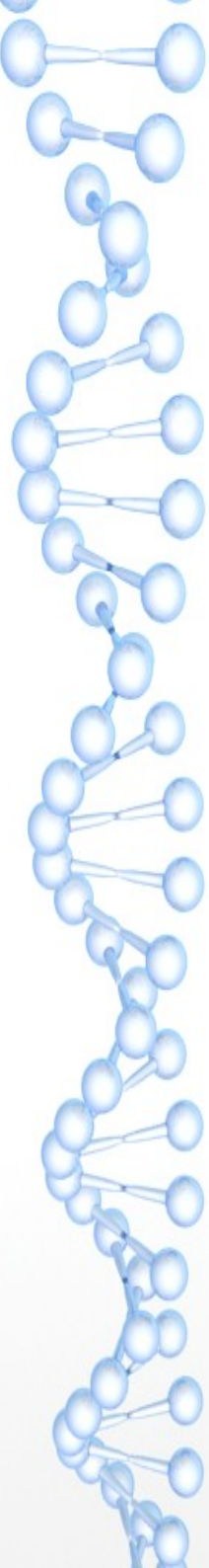
$$\begin{array}{r} 111 \\ \times 133 \\ \hline 4503 \end{array}$$

Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

$$\begin{array}{r} 111 \\ | \\ \times 133 \\ \hline = 14503 \end{array}$$

Multiplication


$$\begin{array}{r} 89 \\ \times 73 \\ \hline =???? \end{array}$$

$$\begin{array}{r} 111 \\ \times 133 \\ \hline = 14503 \\ = 6497 \end{array}$$



Something more complicated

$\sqrt{1369}$

=??



Something more complicated

$\sqrt{1369}$

=??

$\sqrt{1431}$

Something more complicated

$$\sqrt{1369}$$

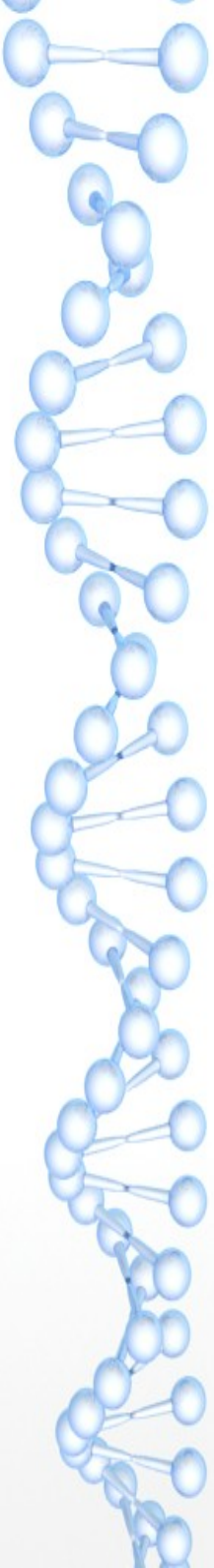
$$=??$$

$$\bar{2}$$

$$\sqrt{1431}$$

$$8)$$

$$= 4/$$



Something more complicated

$$\sqrt{1369}$$

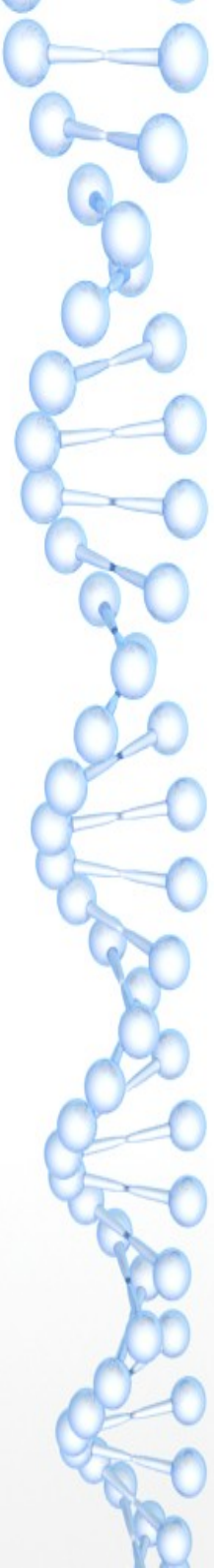
$$=??$$

$$\overline{21}$$

$$\sqrt{1431}$$

$$8)$$

$$= 4/\overline{3}.$$



Something more complicated

$$\sqrt{1369}$$

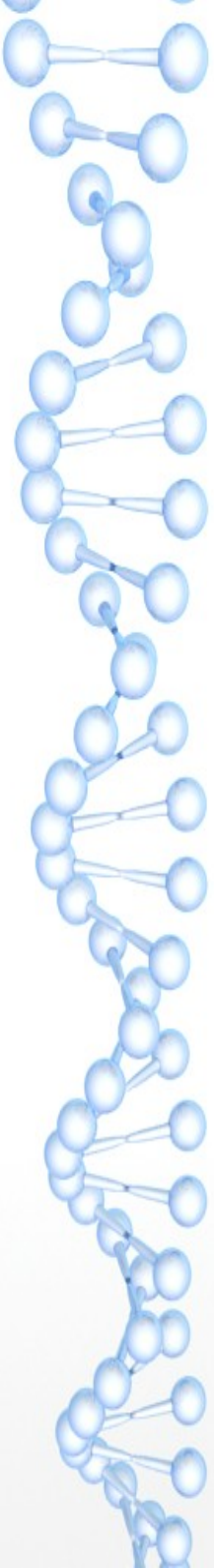
$$=??$$

$$\sqrt{210}$$

$$\sqrt{1431.0}$$

$$8)$$

$$= 4/\bar{3}.0$$



Something more complicated

$$\sqrt{1369}$$

$$=??$$

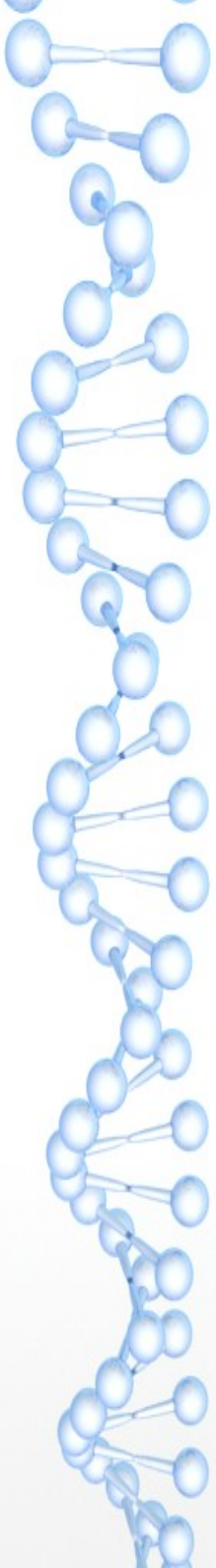
$$\overline{210}$$

$$\sqrt{1431.0}$$

$$8)$$

$$= 4/\overline{3}.0$$

$$= 4\overline{3}$$



Something more complicated

$$\sqrt{1369}$$

$$=??$$

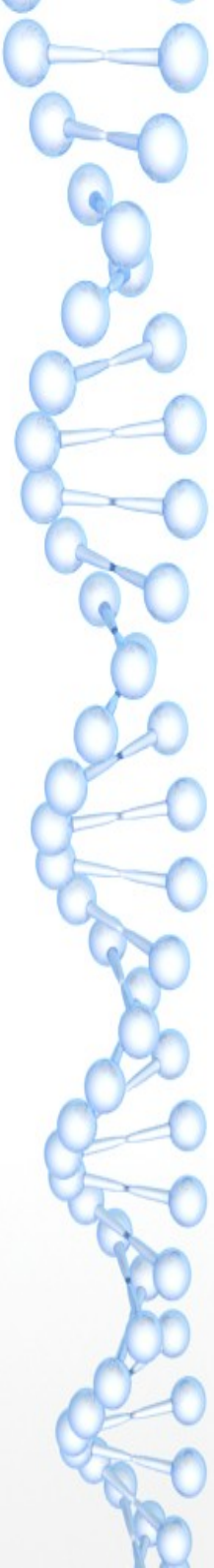
$$\overline{210}$$

$$\sqrt{1431.0}$$

$$8)$$

$$= 4/\overline{3}.0$$

$$= 4\overline{3} = 37$$

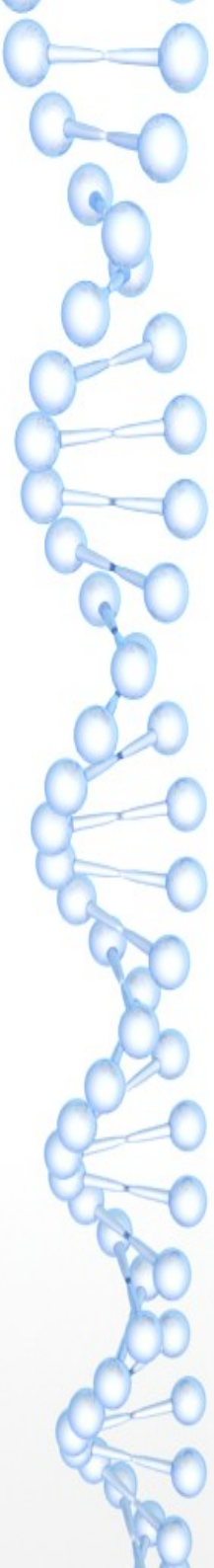




Let's check

$$\sqrt{1369}$$
$$=37?$$

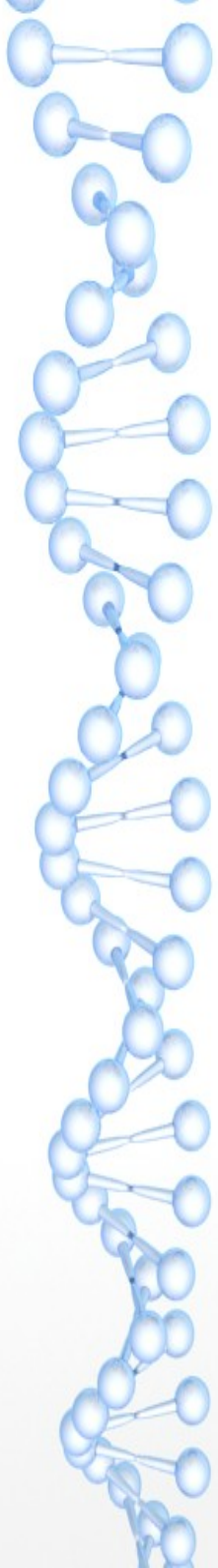
$$43^2$$



Let's check

$$\sqrt{1369}$$
$$= 37?$$

$$= \begin{array}{r} | \\ 4\overline{3}^2 \\ 9 \end{array}$$

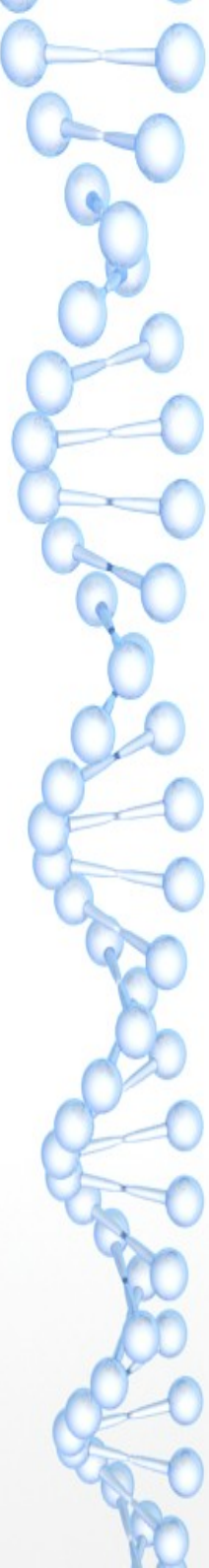


Let's check

$$\sqrt{1369}$$
$$= 37?$$

$$\begin{array}{r} \times \\ 43^2 \\ = 49 \\ \bar{2} \end{array}$$

Let's check


$$\sqrt{1369}$$
$$=37?$$

$$\begin{array}{r} | \\ 4\overline{3}^2 \\ =14\overline{4}9 \\ \underline{2} \end{array}$$



Let's check

$$\sqrt{1369}$$
$$=37$$

$$43^2$$
$$=1449$$
$$\bar{2}$$
$$=1369$$



Vedic Maths

- Negative digits are great
- Other interesting ways to do arithmetic
- Don't believe the origin story