Mental attitude to work with the manual.

1. Focus your attention on the requirement of the problem (what you need to find). Keep in mind the solution to the exercise until the end. Select the necessary tool (method) to implement the idea.
2. Find the (R.O.V.V.) range of valid values, appearing in her, do not let her out of sight.
3. Make identical transformations of expressions.
4. Choose a dimensional pace of work in order to avoid errors in calculations, signs, formulas, etc.

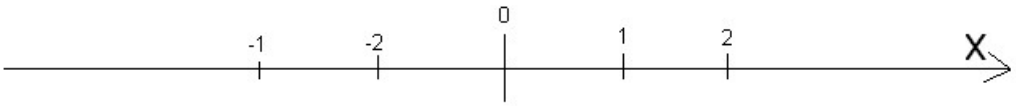
This psychological attitude eliminates many mistakes and shortcomings.

Arithmetic, algebra and the beginning of analysis.

Section 1
Real numbers

Numbers of 1, 2, 3 etc. which are used to count objects, are called natural and are designated N.

The straight line on which the origin, unit segment and direction are selected is called a number or coordinate line..



The direction to the right of the origin is considered positive, and to the left is negative.

Two numbers that are on the number line on opposite sides of the origin and at the same distance from it are called opposite.

We can consider that there are two opposite numbers that differ from each other only in signs. For example, 12 and -12; -5 and 5, 0 - opposite to myself.

Natural numbers, their opposite numbers and the number 0 are called integers and are denoted Z. For example, -9; 0; 16.

Number written as $\frac{m}{n}$, where m – integer, and n – natural, called fractional.

For example, $\frac{2}{3}$; -4,2.

Integer and fractional numbers are rational and are denoted Q.

Fractions are normal and decimal. $\frac{2}{3}$ – regular fraction; -4,5 – decimal.

A decimal fraction is called periodic if it contains one or more digits that are in the fractional part are constantly repeated.

A group of numbers that are repeated is called a period.

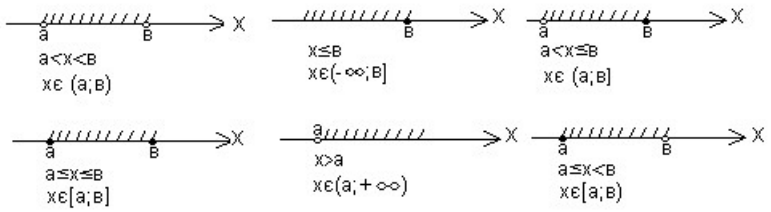
2,353535…= 2,(35).

35 – fraction period.

Infinite non-periodic fractions form a set of irrational numbers. For example, $\sqrt{2}$; $-\sqrt{7}$.

Rational and irrational numbers form a set of real numbers and are denoted R.

Some important subsets of the set of real numbers are, in particular, the number intervals.



Rounding numbers

To round a number to a certain digit, you need:

1. Divide all digits to the right of this digit with a vertical bar;

2. Do not change the last digit that remained in the number before the line, if the first of the separated digits after the line is less than 5 and less than the last digit that remained in the number, increase by one if the first of the separated digits is greater than or equal to 5.

For example: number 6,3514 rounded to the hundredths.

Solution: $6{,}35|14 \approx 6{,}35$, because 1 is less than 5.

Number 94,4672 round to tenths.

Solution: $94{,}4|672 \approx 94{,}5$, because 6 is greater than 5.

Converting fractions to decimal and vice versa

To convert an ordinary fraction to a decimal, you need to divide the numerator of the fraction by its denominator.

For example: $\frac{3}{4} = 3 : 4 = 0{,}75$. Or you can use the following rule:

To turn an ordinary fraction into a decimal, you need to multiply the numerator and denominator of this fraction by such a number that the denominator is formed 10,100, 1000,10000, etc.

To turn the final decimal fraction into a regular one, you need to write this fraction using the risks of the fraction. For example $2{,}3 = 2\frac{3}{10}$.

If the decimal fraction is a periodic fraction, then to convert it to a regular fraction, it is advisable to use this algorithm:

1. Write down a periodic fraction, keeping the first two periods in it;
2. In the numerator of the future ordinary fraction, write the difference between numbers composed of digits that are in front of the second period and before the first period.

3. In the denominator, write down as many “nines” as there are numbers in the period and to the right to assign to them as many zeros as there are numbers between the comma and the first period.

For example, $0,4(19) = 0,41919\ldots = \frac{419-4}{990} = \frac{415}{990} = \frac{83}{198}$.

$3,45(472) = 3,45472472\ldots = 3\frac{45472-45}{99900} = 3\frac{45427}{99900}$.

Percent

One hundredth of a number is called its percentage.

It is convenient to solve problems with percentages using proportions. In this case, it is necessary to put the required number in correspondence with X, and the numerical, from which the percent is sought, to put - 100%.

For example,

№1.1 ***а)***. To find 20% of 400 grn.

Solution:

20% - x grn.

100% - 400 grn.

We have a proportion: $\frac{20}{100} = \frac{x}{400}$; $x = \frac{20 \cdot 400}{100} = 80$ (grn.).

Answer: 80 grn.

In this case, it is necessary that the units of the same name are in the same column.

б). Найти число, 20% которого равны 80 grn.

Solution:

20% - 80 grn.

100% - x grn.

We have a proportion: $\frac{20}{100} = \frac{80}{x}$; $x = \frac{80 \cdot 100}{20}$; $x = 400$ (grn.).

Answer: 400 grn.

в). What percentage is the number 80 of the number 400?

Solution:

400 – 100%

80 – x%

We have a proportion: $\frac{400}{80} = \frac{100}{x}$; $x = \frac{80 \cdot 100}{400}$; $x = 20(\%)$.

Answer: 20%.

In case of ***в*** you can use this rule:

To find the percentage of two numbers, you can divide one number by another and multiply the resulting fraction by 100%.

For example, to find the percentage of numbers 21,6 and 48 we can $\frac{21,6}{48} = 0,45$;

0,45 x 100% = 45%.

Answer: 45%.

Let's make some methodological notes when solving some of the difficult exercises in this section.

1.2 1). Find the number, 2,5% which is equal to $\dfrac{(9\frac{3}{4}:5{,}2+3{,}4\cdot 2\frac{7}{34}):1\frac{9}{16}}{0{,}31\cdot 8\frac{2}{5}-5{,}61:27\frac{1}{2}}$.

Solution:

We calculate the value of this expression in accordance with the established order of performing arithmetic operations:

1). $9\frac{3}{4}:5{,}2=\frac{39}{4}:5\frac{2}{10}=\frac{39}{4}:5\frac{1}{5}=\frac{39}{4}:\frac{26}{5}=\frac{39\cdot 5}{4\cdot 26}=\frac{15}{8}=1\frac{7}{8}$;

In number $\frac{15}{8}$ highlighted the whole part, because in the next actions it will neither multiply nor share.

2). $3{,}4\cdot 2\frac{7}{34}=\frac{3{,}4}{1}\cdot\frac{75}{34}=\frac{3{,}4\cdot 75}{1\cdot 34}=\frac{15}{2}=7\frac{1}{2}$;

3). $1\frac{7}{8}+7\frac{1}{2}=8\frac{7+4}{8}=8\frac{11}{8}=9\frac{3}{8}$;

4). $9\frac{3}{8}:1\frac{9}{16}=\frac{75}{8}:\frac{25}{16}=\frac{75\cdot 16}{8\cdot 25}=\underline{6}$

This result is underlined with a line so that it can be quickly found later.

5). $0{,}31\cdot 8\frac{2}{5}=\frac{31}{100}\cdot\frac{42}{5}=\frac{651}{250}=2\frac{151}{250}$;

6). $5{,}61:27\frac{1}{2}=5\frac{61}{100}:\frac{55}{2}=\frac{561}{100}:\frac{55}{2}=\frac{561\cdot 2}{100\cdot 55}=\frac{561}{2750}$;

7). $2\frac{151}{250}-\frac{564}{2750}=2\frac{1661-561}{2750}=2\frac{1100}{2750}=2\underline{\frac{2}{5}}$;

8). $6:2\frac{2}{5}=\frac{6}{1}:\frac{12}{5}=\frac{6\cdot 5}{1\cdot 12}=\frac{5}{2}$.

Let, x – the required number, then

$2{,}5\%-\frac{5}{2}$,

$100\%-x$. We have a proportion: $\dfrac{2{,}5}{100}=\dfrac{\frac{5}{2}}{x}$; $\quad x=\dfrac{\frac{5}{2}\cdot 100}{2{,}5}=100.$

Answer: 100.

Sometimes it is useful to pre-simplify an expression by reducing a fraction or putting a common factor outside of parentheses.

1.3 Calculate:

$$\left(\frac{3\cdot(\frac{17}{90}-0{,}125:1\frac{1}{8}):480}{(7:1{,}8-2\frac{1}{3}\cdot 1{,}5):2\frac{2}{3}}\right)^{-1}:\left(\frac{679\cdot 10^{-2}}{0{,}7}+0{,}3\right)=30$$

Solution:

Let's simplify the divided in this expression - get rid of the negative exponent:

$$\frac{(7:1{,}8-2\frac{1}{3}\cdot 1{,}5):2\frac{2}{3}}{3\cdot(\frac{17}{90}-0{,}125:1\frac{1}{8}):480}=\frac{(7:1{,}8-\frac{7}{3}\cdot 1{,}5)\cdot\frac{3}{8}\cdot\frac{160}{1}}{\frac{17}{90}-0{,}125:1\frac{1}{8}}=$$

1). $7:1{,}8=\frac{7}{1}:1\frac{4}{5}=\frac{7}{1}:\frac{9}{5}=\frac{7\cdot 5}{1\cdot 9}=\frac{35}{9}$;

2). $\frac{7}{3}\cdot\frac{1{,}5}{1}=3{,}5=3\frac{1}{2}$;

3). $\frac{35}{9}-3\frac{1}{2}=\frac{35}{9}-\frac{7}{2}=\frac{70-63}{18}=\frac{7}{18}$;

4). $\frac{7}{18}\cdot 60=\frac{70}{3}$;

5). $0{,}125:1\frac{1}{8}=0{,}125:1{,}125=\frac{1}{9}$;

6). $\frac{17}{90}-\frac{1}{9}=\frac{17-10}{90}=\frac{7}{90}$;

7). $\frac{70}{3}:\frac{7}{90}=\frac{70\cdot 90}{3\cdot 7}=\underline{300}$

Simplify the expression divisor:

$$\frac{679\cdot 10^{-2}}{0{,}7}+0{,}3=\frac{679}{0.7\cdot 100}+0{,}3=\frac{679}{70}+\frac{3}{10}=\frac{679+21}{70}=\underline{10.}$$

8). $\frac{300}{10}=30.$

In the problem proposed below, it is convenient to start the solution by applying the distribution law of multiplication with respect to subtraction.

1.4 Calculate in the most rational way:

$$\frac{\sqrt{6{,}3\cdot 1{,}7}\cdot\left(\sqrt{\frac{6{,}3}{1{,}7}}-\sqrt{\frac{1{,}7}{6{,}3}}\right)}{\sqrt{(6{,}3+1{,}7)^2-4\cdot 6{,}3\cdot 1{,}7}}=\frac{\sqrt{6{,}3\cdot 1{,}7\cdot\frac{6{,}3}{1{,}7}}-\sqrt{6{,}3\cdot 1{,}7\cdot\frac{1{,}7}{6{,}3}}}{\sqrt{6{,}3^2+2\cdot 6{,}3\cdot 1{,}7+1{,}7^2-4\cdot 6{,}3\cdot 1{,}7}}=\frac{\sqrt{6{,}3^2}-\sqrt{1{,}7^2}}{\sqrt{6{,}3^2-2\cdot 6{,}3\cdot 1{,}7+1{,}7^2}}=$$

$$=\frac{|6{,}3|-|1{,}7|}{\sqrt{(6{,}3-1{,}7)^2}}=\frac{6{,}3-1{,}7}{|6{,}3-1{,}7|}=\frac{4{,}6}{4{,}6}=1.$$

Answer: 1.

Each exercise, taking into account its individual specifics, requires one way or another to solve it. The exercises we have already solved are vividly evidence of this. Any method of solving mathematical exercises involves the use of the previous experience of the solver. In addition, a prerequisite for the formation of a solution method is impeccable knowledge of mathematical laws, rules, theorems, properties, and the like.

Our focus on solving computational exercises is due to two points.:

1). They are basic for all other exercises..

2). In recent years, exercises of a computational nature have been included in the number of exam problems in mathematics for applicants to higher and secondary educational institutions.

1.5 It is advisable in time to solve, in a chain, exercises of this type:

$$\frac{2{,}4\cdot\sqrt{8\frac{1}{3}}+\sqrt{2\frac{1}{12}}+\frac{1}{2}\sqrt{\frac{1}{3}}-\frac{1}{3}\sqrt{27}}{1\frac{1}{3}\cdot\sqrt{4\frac{1}{2}}-\sqrt{0{,}5}+1{,}5\cdot\sqrt{2}+20\sqrt{\frac{1}{50}}-\sqrt{32}}\cdot\sqrt{\frac{2}{3}}=\frac{2{,}4\cdot\sqrt{\frac{25}{3}}+\sqrt{\frac{25}{12}}+\frac{1}{2}\sqrt{\frac{1}{3}}-\frac{1}{3}\sqrt{9\cdot3}}{\frac{4}{3}\cdot\sqrt{\frac{9}{2}}-\sqrt{\frac{1}{2}}+1{,}5\sqrt{2}+20\cdot\sqrt{\frac{1}{25\cdot2}}-\sqrt{16\cdot2}}\cdot$$

$$\cdot\sqrt{\frac{2}{3}}=2{,}4\cdot5\cdot\sqrt{\frac{1}{3}}+\frac{5}{2}\cdot\sqrt{\frac{1}{3}}+\frac{1}{2}\sqrt{\frac{1}{3}}-\sqrt{3}$$

$$\frac{12\cdot\sqrt{\frac{1}{3}}+2{,}5\sqrt{\frac{1}{3}}+0{,}5\sqrt{\frac{1}{3}}-\sqrt{3}}{\frac{4}{3}\cdot3\cdot\sqrt{\frac{1}{2}}-\sqrt{\frac{1}{2}}+1{,}5\sqrt{2}+4\sqrt{\frac{1}{2}}-4\sqrt{2}}\cdot\sqrt{\frac{2}{3}}=\frac{12\cdot\sqrt{\frac{1}{3}}+2{,}5\sqrt{\frac{1}{3}}+0{,}5\sqrt{\frac{1}{3}}-\sqrt{3}}{4\sqrt{0{,}5}-\sqrt{0{,}5}+1{,}5\sqrt{2}+4\sqrt{0{,}5}-4\sqrt{2}}\cdot\sqrt{\frac{2}{3}}=$$

$$=\frac{15\cdot\sqrt{\frac{1}{3}}-\sqrt{3}}{7\cdot\sqrt{0{,}5}-2{,}5\sqrt{2}}\cdot\sqrt{\frac{2}{3}}=\frac{15:\sqrt{3}-\sqrt{3}}{\frac{7}{\sqrt{2}}-2{,}5\sqrt{2}}\cdot\sqrt{\frac{2}{3}}=\frac{\frac{15-3}{\sqrt{3}}}{\frac{7-5}{\sqrt{2}}}\cdot\sqrt{\frac{2}{3}}=\frac{\frac{12}{\sqrt{3}}}{\frac{2}{\sqrt{2}}}\cdot\frac{\sqrt{2}}{\sqrt{3}}=\frac{12\sqrt{2}}{2\sqrt{3}}\cdot\frac{\sqrt{2}}{\sqrt{3}}=4.$$

When solving complex exercises, it is advisable to make substitutions of expressions that are separate blocks, in this exercise are highlighted in large letters of the alphabet.

1.6 Find X*:*

$$5\frac{4}{7}:\left(\underset{1\ 4\ 4\ 4\ 4\ 4\ 44}{x:1{,}3+8{,}4\cdot\frac{6}{7}\cdot\left(6-\frac{\underset{A}{(2{,}3+5:6{,}25)\cdot7}}{\underset{2\ 4\ 4\ 4\ 4\ 4\ 43}{8:0{,}0125+6{,}9}}\right)}\right)=1\frac{1}{14}.$$

Solution:

$5\frac{4}{7}:A=1\frac{1}{14};$

A$=5\frac{4}{7}:1\frac{1}{14}=\frac{39}{7}:\frac{15}{4}=\frac{39\cdot14}{7\cdot15}=\frac{26}{5}=5\frac{1}{5}.$

$$x:1{,}3+8{,}4\cdot\frac{6}{7}\cdot\left(6-\frac{\underset{1\ 4^{0}4\ 2\ 4\ 43}{(2{,}3+5:6{,}25)\cdot7}}{\underset{14\ 2\ 43}{8:0{,}0125+6{,}9}}\right)=5\frac{1}{5};$$

$x:1{,}3+1{,}2\cdot6\cdot(6-2{,}3-5:6{,}25)=5\frac{1}{5};$

$x:1{,}3+1{,}2\cdot6\cdot(3{,}7-0{,}8)=5\frac{1}{5};$

$x:1{,}3+1{,}2\cdot17{,}4=5\frac{1}{5};$

$x:1{,}3+20{,}88=5{,}2;$

$x:1{,}3=5{,}2-20{,}88;$

x:1,3= $-15{,}68$;

$x=-15{,}68\cdot 1{,}3$;

$x=-20{,}384$.

Answer: $-20{,}384$.

1.7 Find x with expression: 4520:

$$\left(225-\underbrace{4209520}_{A}:\frac{1000795+(250+x)\cdot 50}{27}\right)=40;$$

4520:A=40;

A=4520:40=113.

$$225-\underbrace{4209520}_{B}:\frac{1000795+(250+x)\cdot 50}{27}=113;$$

225 – B=113;

B=225 – 113;

B=112;

$$\underbrace{4209520:\frac{1000795+(250+x)\cdot 50}{27}}_{C}=112;$$

420520:C=112;

C=4209520:112;

C=37585;

$$\frac{\overbrace{1000795+(250+x)\cdot 50}^{D}}{27}=37585$$

D:27=37585;

D=37585 · 27;

D=1014795;

$$1000795+\underbrace{(250+x)\cdot 50}_{E}=1014795;$$

E=1014795 – 1000795;

E=14000.

$(250+x)\cdot 50=14000$;

$(250+x)$=14000:50;

250+x=280;

x=280 – 250;

x=30.

Answer: x=30.

1.8 Find x with proportion:

$$\frac{0{,}125x}{\left(\frac{19}{24}-\frac{21}{40}\right)\cdot 8\frac{7}{16}}=\frac{\left(1\frac{28}{63}-\frac{17}{21}\right)\cdot 0{,}7}{0{,}675\cdot 2{,}4-0{,}02}.$$

Solution. We denote A= $\left(\frac{19}{24}-\frac{21}{40}\right)\cdot 8\frac{7}{16}$; B= $\left(1\frac{28}{63}-\frac{17}{21}\right)\cdot 0{,}7$; C= $0{,}675\cdot 2{,}4-0{,}02$,

Then this proportion will have the form $\frac{0{,}125x}{A}=\frac{B}{C}$.

Let's calculate the values of the expressions A, B and C:

1). $\frac{19}{24}-\frac{21}{40}=\frac{95-63}{120}=\frac{32}{120}=\frac{4}{15}$;

2). $\frac{4}{15}\cdot 8\frac{7}{16}=\frac{4}{15}\cdot\frac{135}{16}=\frac{9}{4}$; $\underline{A=\frac{9}{4}}$.

3). $1\frac{28}{63}-\frac{17}{21}=\frac{91}{63}-\frac{17}{21}=\frac{91-51}{63}=\frac{40}{63}$;

4). $\frac{40}{63}\cdot 0{,}7=\frac{40}{63}\cdot\frac{7}{10}=\frac{4}{9}$; $\underline{B=\frac{4}{9}}$.

5). $0{,}675\cdot 2{,}4=1{,}62$;

6). 1,62 – 0,02=1,6. $\underline{C=1{,}6.}$

Formed such proportion: $\frac{0{,}125x}{\frac{9}{4}}=\frac{\frac{4}{9}}{1{,}6}$. By its main property, we have:

$0{,}125x\cdot 1{,}6=\frac{9}{4}\cdot\frac{4}{9}$;

0,2*x*=1;

x=1:0,2;

x=5.

Answer: *x*=5.

1.9 Calculate, $\frac{\left(0{,}666...+\frac{1}{3}\right):0{,}25}{1{,}12333...:0{,}0925}+12{,}5\cdot 0{,}64=8\frac{111}{337}$.

Solution.

Convert periodic fractions to regular fractions: 0,666…=$\frac{6-0}{9}=\frac{6}{9}=\frac{2}{3}$;

1,12333…=$1\frac{123-12}{900}=1\frac{111}{900.}$

1). 0,666…+$\frac{1}{3}=\frac{2}{3}+\frac{1}{3}=\frac{3}{3}=1$;

2). 1:0,25=$\underline{4}$;

3). 1,12333…:0,0925=$1\frac{111}{900}:\frac{925}{10000}=\frac{1011}{900}:\frac{925}{10000}=\frac{1011\cdot 10000}{900\cdot 925}=\frac{4044}{333}=\frac{1348}{111}$;

4). 4:$\frac{1348}{111}=\frac{4\cdot 111}{1\cdot 1348}=\underline{\frac{111}{337;}}$

5). $12{,}5\cdot 0{,}64=8$;

6). $\frac{111}{337}+8=8\frac{111}{337}$;

It is useful to solve exercises with a number module. It is advisable to recall the definition of the modulus of a number:
The modulus of the number a *is the number* a *itself, if* a *is an integral number, and its opposite, if* a *is a negative number*

It is useful to solve exercises with a number modulus.

$$|a| = \begin{cases} a, \text{ якщо } a \geq 0, \\ -a, \text{ якщо } a < 0, \end{cases}$$

This should be done in combination with identity $\sqrt{a^2} = |a|$.

Self-study assignments:

1.10 Calculate:

$$\left(\sqrt{\left(\frac{1}{2}-\sqrt{2}\right)^2}-\sqrt[3]{\left(1+\sqrt{2}\right)^3}\right)^2 = \left(\left|\frac{1}{2}-\sqrt{2}\right|-\left(1+\sqrt{2}\right)\right)^2 = \left(\sqrt{2}-\frac{1}{2}-1-\sqrt{2}\right)^2 = \left(-\frac{3}{2}\right)^2 = \frac{9}{4} = 2{,}25.$$

1.11 Simplify expressions:

а). $\sqrt{6+2\sqrt{5}}$. Solution: the radical expression is represented as a square binomial:

$$6+2\sqrt{5} = 5+2\cdot\sqrt{5}\cdot 1+1 = \left(\sqrt{5}\right)^2+2\sqrt{5}\cdot 1+1^2 = \left(\sqrt{5}+1\right)^2;$$

$$\sqrt{6+2\sqrt{5}} = \sqrt{\left(\sqrt{5}+1\right)^2} = \left|\sqrt{5}+1\right| = \sqrt{5}+1.$$

б). $\sqrt{8-2\sqrt{15}}$.

1.12 Calculate:

$$\left(\frac{\left(11-9\frac{1}{2}\right):0{,}003}{\left(4{,}05-3\frac{13}{20}\right)\cdot 20}-\frac{0{,}45-\frac{9}{40}}{13\frac{5}{8}:\left(2\frac{3}{5}+\frac{1}{3}\right)}\right):62\frac{51}{200}.$$

Answer: 1.

1.13 $$\frac{\left(0{,}5:1{,}25+\frac{7}{5}:1\frac{4}{7}-\frac{3}{11}\right)\cdot 3}{\left(1{,}5+\frac{1}{4}\right):18\frac{1}{3}}.$$

Answer: 32.

1.14 $$\left(\left(\frac{7}{9}-\frac{47}{72}\right):1{,}25+\frac{7}{40}\right):(0{,}358-0{,}108)\cdot 1{,}6-\frac{19}{25}.$$

Answer: 1.

1.15 $\left(\dfrac{(2{,}7-0{,}8)\cdot 2\frac{1}{3}}{(5{,}2-1{,}4):\frac{3}{70}}+0{,}125\right):2\frac{1}{2}+0{,}43.$

Answer: $\frac{1}{2}$.

1.16 $\dfrac{2\frac{3}{4}:1{,}1+3\frac{1}{3}}{2{,}5-0{,}4\cdot 3\frac{1}{3}}:\frac{5}{7}-\dfrac{\left(2\frac{1}{6}+4{,}5\right)\cdot 0{,}375}{2{,}75-1\frac{1}{2}}.$

Answer: 5.

1.17 $\left(520\cdot 0{,}43:0{,}26-217\cdot 2\frac{3}{7}\right)-\left(31{,}5:12\frac{3}{5}+114\cdot 2\frac{1}{3}+61\frac{1}{2}\right).$

Answer: 3.

1.18 $\left(\dfrac{3{,}75+2\frac{1}{2}}{2\frac{1}{2}-1{,}875}-\dfrac{2\frac{3}{4}+1{,}5}{2{,}75-1\frac{1}{2}}\right)\cdot\frac{10}{11}.$

Answer: 6.

1.19 $\dfrac{3\cdot\sqrt{2{,}5\cdot 3{,}9}\cdot\left(\sqrt{\frac{2{,}5}{3{,}9}}+\sqrt{\frac{3{,}9}{2{,}5}}\right)}{\sqrt{(2{,}5-3{,}9)^2+4\cdot 2{,}5\cdot 3{,}9}}.$

Answer: 1.

1.20 $8\cdot\left(\sqrt{\left(\sqrt{5}-\frac{5}{2}\right)^2}-\sqrt[3]{\left(1-\sqrt{5}\right)^3}\right)^2.$

Answer: 18.

1.21 $1+\dfrac{1+3^{\frac{1}{2}}}{4+3^{\frac{1}{2}}}:\dfrac{1}{3^{\frac{3}{2}}-1}.$

Answer: 3.

1.22

а). $\dfrac{3\left(5\sqrt[3]{4\sqrt[3]{192}}+7\sqrt[3]{18\sqrt[3]{81}}\right)}{\sqrt[3]{12\sqrt[3]{24}}+6\sqrt[3]{375}}$. Answer: 31.

б). $\left(\sqrt{3-\sqrt{2}}\right)\left(\sqrt{4-2\sqrt{3}}+\sqrt{3+2\sqrt{2}}\right)$. Answer: 1.

в). $\dfrac{\sqrt{17+12\sqrt{2}}-1}{\sqrt{2}+1}$. Answer: 2.

г). $\left(\sqrt{\left(\sqrt{2}-\frac{3}{2}\right)^2}-\sqrt[3]{\left(1-\sqrt{2}\right)^3}\right)^2$. Answer: $\frac{1}{4}$.

1.23 Solve the equation: $\frac{\left(4-3{,}5\cdot\left(2\frac{1}{7}-1\frac{1}{5}\right)\right):0{,}16}{x}=\frac{3\frac{2}{7}-\frac{3}{14}:\frac{1}{6}}{41\frac{23}{84}-40\frac{49}{60}}$. Answer: 1.

1.24 $\frac{15{,}2\cdot 0{,}25-48{,}51:14{,}7}{x}=\frac{\left(\frac{13}{44}-\frac{2}{11}-\frac{5}{66}:2\frac{1}{2}\right)\cdot 1\frac{1}{5}}{3{,}2+0{,}8\cdot\left(5\frac{1}{2}-3{,}25\right)}$. Answer: 25.