

DIY: Arithmetic of Numbers

To review Arithmetic of numbers, watch the following set of YouTube videos introducing positive and negative integers, operations on integers, order of operations in an arithmetic expression, absolute values, place values and rounding. They are followed by several practice problems for you to try, covering all the basic concepts covered in the videos, with answers and detailed solutions. Some additional resources are included for more practice at the end.

1. [Numbers](#)
2. [Integers](#)
3. [Adding and subtracting Integers](#)
4. [Multiplying and dividing Integers](#)
5. [Order Of operations](#)
6. [Absolute value of numbers-1](#)
[Absolute value of numbers-2](#)
7. [Decimal place value](#)
8. [Rounding](#)

Practice problems: The following problems use the techniques demonstrated in the above videos. The answers are given after the problems. Then detailed solutions, if you need them, are provided after the answer section. For further assistance and help please contact [Math Assistance Area](#).

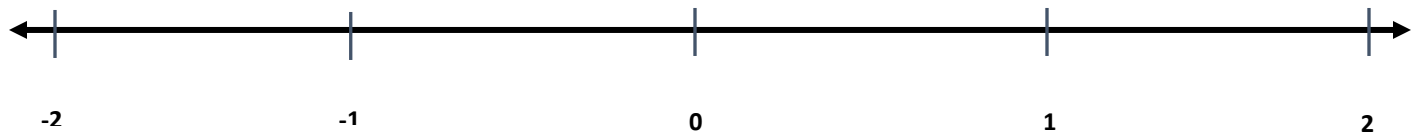
1. To which set(s) do the number belong (*Real number, whole number, integer, rational number, zero or irrational number*):

a. 2.225 b. -25 c. 0 d. 697

e. $3\frac{5}{8}$ f. $\sqrt{7}$ g. π h. $-\frac{1}{3}$

2. Plot the following on a number line:

a. -1 b. 1.5 c. -2 d. 2



3. Put <, > or = sign as appropriate:

a. -10 ○ 2

b. 217 ○ 95

c. -12 ○ -20

d. 100 ○ (200-100)

4. Evaluate absolute values:

a. $|25|$ b. $|-21.25|$ c. $|23 - 56|$ d. $|(-4)^2|$
e. $|-89| - |2|$ f. $|0|$ g. $-|(-3)^2|$

5. Evaluate:

a. $22 + 69$ b. $56 - 9$ c. $2000 + 9871$ d. $75 - 89$
e. $-27 + 19$ f. $(-18) + (-9)$ g. $(-17) - (-20)$ h. $56 - (-10)$

6. Evaluate:

a. 2×12 b. $33 \times (-12)$ c. $56 \div 4$ d. $99 \div (-11)$
e. $(-3) \times (4)$ f. $(-5) \times (-4)$ g. $(-27) \div (3)$ h. $(-50) \div (-10)$

7. Evaluate using order of operations:

a. $3 \times (22 - 10) + 5$ b. $9^2 + 22(6 + 4) - 14(2 * 9)$
c. $22 \div (4 + 7) + 10$ d. $(11^2 + 2^3) + (2 + 3 \times 4 - 9) + 100$
e. $19 - 2(3+2) + 1$ f. $|6(2-10)| + 4|5 - 2|^2$

8. Find the place value of the digit in the box for the following numbers:

a. 1,203,2 $\boxed{2}$ 2 b. $\boxed{1}$ 5,478 c. 122.2 $\boxed{5}$
d. $\boxed{5}$,893.226 e. 6893.25 $\boxed{6}$ f. 2 $\boxed{3}$

9. Write the following as a single number:

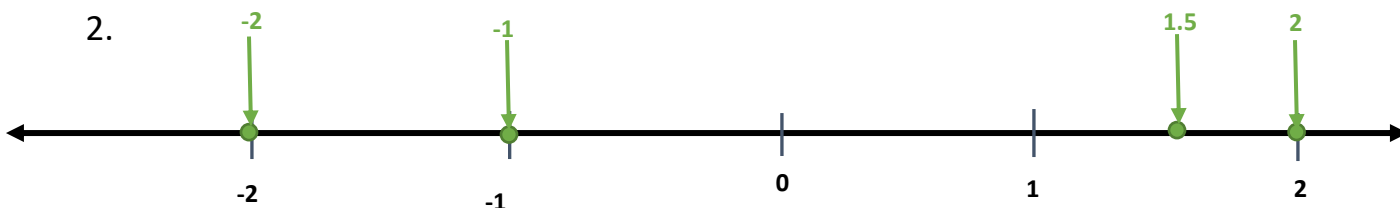
$$6(1000) + 8(10) + 4 + \frac{3}{10} + \frac{5}{100}$$

10. Find $\frac{(2^2+12)+450}{100}$ and round up the answer to the:

- a. nearest integer b. nearest tenth

Answers:

1. a) Real ,Rational b) Integer, Real, Rational c) Whole, Real, Rational, Zero d) Integer, Whole, Natural, Rational, Real
e) Real, Rational f) Irrational, Real g) Irrational, Real h) Real, Rational



3. a) $-10 < 2$ b) $217 > 95$ c) $-12 > -20$ d) $100 = (200-100)$

4. a) 25 b) 21.25 c) 33 d) 16 e) 87 f) 0 g) -9

5. a) 91 b) 47 c) 11871 d) -14 e) -8

f) -27 g) 3 h) 66

6. a) 24 b) -396 c) 14 d) -9

e) -12 f) 20 g) -9 h) 5

7. a) 41 b) 49 c) 12 d) 234

e) 10 f) 84

8. a) Tens place b) Ten c) Hundredths d) Thousands place

Thousands

place

e) Thousandths f) Ones

place

9. 6084.35

10 a) 5 b) 4.7

Detailed Solutions to Arithmetic of Numbers Problems

1 a) Real and Rational

b) -25 is a negative Integer
hence it is also Real
and Rational

c) whole number, Real,
Rational and zero

e) Real and Rational

d) Integer, whole number,
Natural number, Rational
and Real

as $3\frac{5}{8} = \frac{29}{8}$

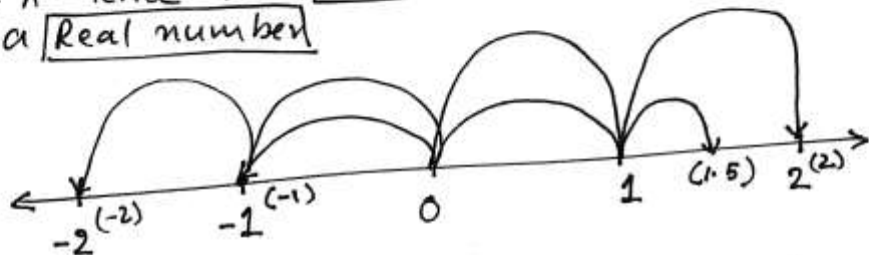
f) $\sqrt{7}$ is non terminating
and non repeating
decimal so it is

g) π is also a non terminating
and non repeating decimal.
 $\pi = \frac{22}{7}$ or $\pi = 3.14$, they look
like rational numbers but these
are just approximations of the value
of π hence it is Irrational and
a Real number

Irrational but a Real
number

h) Real and a
rational number

2)



3 a) $-10 < 2$

since -10 is a negative integer
so it lies on the left of 2 on
the number line and hence is
smaller

b) $217 > 95$

since 217 and 95 are both
positive and 217 is a larger
number

3c) $-12 > -20$ since both the numbers are negative and on the number-line -20 occurs left of -12 hence -12 is larger than -20

3d) $100 = (200 - 100)$ since $200 - 100 = 100$ hence both the sides are equal to each other.

4a) $|25| = 25$ since 25 is the positive value of 25

4b) $|-21.25| = 21.25$ since 21.25 is the positive value of -21.25

$$4c) |23 - 56| = |-33| = 33$$

$$4d) |(-4)^2| = |16| = 16$$

$$4e) |-89| - |2| = 89 - 2 = 87$$

$$4f) |0| = 0$$

$$4g) -|(-3)^2| = -|9| = -9$$

$$5a) \begin{array}{r} 22 \\ + 69 \\ \hline 91 \end{array}$$

$$5b) \begin{array}{r} 56 \\ - 9 \\ \hline 47 \end{array}$$

$$5c) \begin{array}{r} 2000 \\ + 9871 \\ \hline 11871 \end{array}$$

5d) $75 - 89$ Difference of 89 and 75 is 14
 $\begin{array}{r} 89 \\ - 75 \\ \hline 14 \end{array}$
but since 89 is the larger quantity and is a negative number hence $75 - 89 = -14$

5e) $-27 + 19$
 Again the difference of
 27 and 19 is $\frac{127}{-19}$
 $\frac{8}{8}$

But since 27 is the
 larger quantity and is
 negative hence $-27 + 19 = \boxed{-8}$

5g) $(-17) - (-20)$
 $-17 + 20 = 20 - 17 = \boxed{3}$

5h) $56 - (-10)$
 $= 56 + 10 = \boxed{66}$

6a) $2 \times 12 =$
 $\begin{array}{r} 12 \\ \times 2 \\ \hline 24 \end{array}$

6c) $56 \div 4 =$
 $\begin{array}{r} 14 \\ 4 \overline{) 56} \\ \underline{-4} \\ 16 \\ \underline{-16} \\ 0 \end{array}$
 hence $56 \div 4 = \boxed{14}$

6d) $99 \div (-11)$
 now $\begin{array}{r} 9 \\ 11 \overline{) 99} \\ \underline{-99} \\ 0 \end{array}$
 Since we are dividing
 a positive number by a
 negative number the
 quotient should be negative
 hence $99 \div (-11) = \boxed{-9}$

5f) $(-18) + (-9)$
 $= -18 - 9$
 Since both have the
 same sign we essen-
 tially add them
 to get $18 + 9 = 27$
 but since 18 is the larger
 quantity and is negative
 hence
 $-18 - 9 = \boxed{-27}$

6b) $33 \times (-12)$
 now $\begin{array}{r} 33 \\ \times 12 \\ \hline 66 \\ 330 \\ \hline 396 \end{array}$ but we are
 multiplying
 a positive
 number to
 a negative
 number hence
 the answer is
 negative
 Therefore $33 \times (-12) = \boxed{-396}$

6e) $(-3) \times (4)$
 since we are multiplying
 a negative number to
 a positive number s.o.
 the answer should be
 negative
 hence $(-3) \times (4) = \boxed{-12}$

6f) $(-5) \times (-4)$
since we are multiplying two
negative numbers, the answer
is positive
hence $(-5) \times (-4) = \boxed{+20}$

6a) $(-50) \div (-10)$ now $10 \overline{)50}$
Since we are
dividing a negative
number by a negative
number, the answer is
positive
hence $(-50) \div (-10) = \boxed{5}$

$$\begin{aligned} 7a) & 3 \times (22 - 10) + 5 \\ & \quad \downarrow \text{parenthesis} \\ & = 3 \times 12 + 5 \\ & \quad \downarrow \text{multiplication} \\ & = 36 + 5 \\ & = \boxed{41} \end{aligned}$$

$$\begin{aligned} 7c) & 22 \div (4 + 7) + 10 \\ & = 22 \div 11 + 10 \\ & = 2 + 10 \\ & = \boxed{12} \end{aligned}$$

$$\begin{aligned} 7e) & 19 - 2(3 + 2) + 1 \\ & = 19 - 2 \times 5 + 1 \\ & = 19 - 10 + 1 \\ & = 9 + 1 = \boxed{10} \end{aligned}$$

$$\begin{aligned} 6g) & (-27) \div 3 \\ \text{now} & 3 \overline{)27} \\ & \quad \underline{-27} \\ & \quad \quad 0 \end{aligned}$$

Since we are
dividing a negative
number by a positive
number the answer
is negative
hence $(-27) \div 3 = \boxed{-9}$

$$\begin{aligned} 7b) & 9^2 + 22(6 + 4) - 14(2 \times 9) \\ & = 81 + 22(6 + 4) - 14(2 \times 9) \\ & = 81 + 22(10) - 14(18) \\ & = 81 + 22 \times 10 - 14 \times 18 \\ & = 81 + 220 - 252 \\ & = 301 - 252 \\ & = \boxed{49} \end{aligned}$$

$$\begin{aligned} 7d) & (11^2 + 2^3) + (2 + 3 \times 4 - 9) + 100 \\ & = (121 + 8) + (2 + 12 - 9) + 100 \\ & = 129 + (4 - 9) + 100 \\ & = 129 + 5 + 100 \\ & = 134 + 100 = \boxed{234} \end{aligned}$$

$$\begin{aligned} 7f) & |6(2 - 10)| + 4|5 - 2|^2 \\ & = |6(-8)| + 4|3|^2 \\ & = |48| + 4 \times 3^2 \\ & = 48 + 4 \times 9 = 48 + 36 = \boxed{84} \end{aligned}$$

8a) 1 2 0 3 2 $\boxed{2}$ 2
 \uparrow \uparrow
 tens ones

8b) $\boxed{1}$ 5 4 7 8
 \uparrow \uparrow \uparrow \uparrow \uparrow
 ten thousands thousands hundreds tens ones

8c) 1 2 2 . 2 $\boxed{5}$
 \uparrow \uparrow
 tenths hundredths

8d) $\boxed{5}$ 8 9 3 . 2 2
 \uparrow
 thousands

8e) 6 8 9 3 . 2 5 $\boxed{6}$
 \uparrow
 thousandths

8f) 2 $\boxed{3}$ $\boxed{\text{ones}}$
 \uparrow

9) $6(1000) + 8(10) + 4 + \frac{3}{10} + \frac{5}{100}$
 $= 6000 + 80 + 4 + 0.3 + 0.05$
 $= \boxed{6084.35}$

10) $\frac{(2^2 + 12) + 456}{100} = \frac{(4 + 12) + 450}{100} = \frac{(16 + 450)}{100}$
 $= \frac{466}{100} = 4.66$

Rounding to

a) nearest integer

b) nearest tenths

$4.66 \approx \boxed{5}$
 $4.66 \approx \boxed{4.7}$

Additional Resources

Click on the links below to download worksheets under “Basics” for more practice:

1. [Order of operations](#)
2. [Number sets](#)
3. [Adding rational numbers](#)
4. [Adding and subtracting rational numbers](#)
5. [Multiplying and dividing rational numbers](#)

Alternatively;

1. Go To <http://www.kutasoftware.com/free.html>
2. Under “**Basics**” click on:
 - Order of operations
 - Number sets
 - Adding rational numbers
 - Adding and subtracting rational numbers
 - Multiplying and dividing rational numbers
3. You can print out the worksheets and work on them. The solutions are provided at the end of the worksheets
4. For help please contact the [Math Assistance Area](#).