Algebra

Example 1:

\[ \frac{5}{3} + \frac{7}{6} = \]

A \quad 2 + \frac{4}{6} \\
B \quad \frac{12}{9} \\
C \quad \frac{17}{6}

In this example \( \frac{5}{3} + \frac{7}{6} = \frac{10}{6} + \frac{7}{6} = \frac{17}{6} \)

The correct answer is C.

Example 2:

\((-4) \times 5 \times (+2) = -2^3 \times 5\)

A \quad \text{richtig} \\
B \quad \text{falsch} \\
C \quad \text{unbestimmt}

Since \[ (-4) \times 5 \times (+2) = -40 \] and since \[ -2^3 \times 5 = -40 \] the equation is correct.

The correct answer is A.

The variable „x“ in an equation is within the domain of real numbers; however all numbers which would lead to an indeterminate equation (e.g. a division by 0) are ignored.

The answers „correct“ and „false“ are be understood so:
"correct“ means a correct result for all numbers in the domain,
"false“ means that the equation is not correct for at least one number in the domain.

For example, for the equation:
\[ x + 2 = x \times 2 \]
is "false", although the equation is correct for \( x = 2 \) (however, for \( x = 1 \) the equation is false)
Functions

Example 1:

\[ x = -4 \] in the function \( f(x) = 5x^2 - 3 \)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>-83</td>
<td>-77</td>
<td>77</td>
</tr>
</tbody>
</table>

When \( x = -4 \) in the function \( f(x) \), the value is 77.
The correct answer is \( C \).

Example 2:

How many zero settings does the function \( g(z) = 5z^2 - 3 \) have?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The function \( g(z) \) has two zero settings, namely \( z = \pm \sqrt{3/5} \).
The correct answer is \( C \).
Estimations

Example 1:

\[ 8.362 + 5.446 + 2.502 = ? \]
By adding the unit positions you can see that the result has to end in a 0.
Therefore 16.310 has to be the correct answer.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.611</td>
<td>16.314</td>
<td>15.996</td>
<td>15.039</td>
<td>16.310</td>
</tr>
</tbody>
</table>

Example 2:

9% of 982 = ?
9% is less than \( \frac{1}{10} \)
\( \frac{1}{10} \) of 982 is 98,2.
The correct answer is 88,38.

<table>
<thead>
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<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>109.12</td>
<td>9.21</td>
<td>88.38</td>
<td>101.24</td>
<td>8.98</td>
</tr>
</tbody>
</table>
Conclusions

Example 1:

In the example you can see 8 figures and instead of a ninth outline there is an empty space. The figures are ordered in 3 columns and 3 rows.

There is a logical structure in both the rows and the columns. In this example column two is double column one and column 3 is 3 times column one. In addition, the second row is always double the first row and the third row is 3 time the first row. The ninth (missing) figure has to logically have 9 points. Figure C is the correct answer.
Example 2:

In this example a rotation takes place in the columns and in the rows. So the correct answer is figure H.
1. My sister has four __________ .
   a.) child
   b.) childs
   c.) children
   d.) childrens

The plural of child is irregular, namely children. The forms „child“ and „childrens“ do not exist.

The correct answer is C „children“.

2. You should ask her __________.
   a.) polite
   b.) politly
   c.) politely
   d.) politing

This sentence demands an adverb which is normally created by adding -ly. The word polite ends with an –e.

There correct answer is therefore C „politely“. 