

Solution Key RT#EX1 Recruitment Test – Maths and Logic

Allotted Time: 60 minutes

1. **Complete** the missing decimals, fractions, percentages and graphics.

(1 pt. for each correct answer = 7 pts.)

Decimal	Percentage	Fraction
0,8	80%	$\frac{4}{5}$
0,75	75%	$\frac{3}{4}$
0,4	40%	$\frac{2}{5}$
0,05	5%	$\frac{1}{20}$

2. **Add** or **subtract**, respectively:

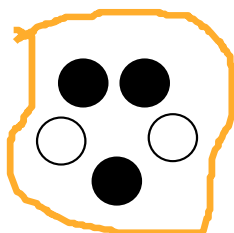
(2 pts. for each correct answer = 4 pts.)

a) $\frac{2}{5} - \frac{4}{3} \cdot \left(-\frac{9}{8}\right) = \frac{19}{10}$

b) $\frac{3}{5} - 3 + \frac{13}{6} = -\frac{7}{30}$

3. You have a bag with 2 white and 3 black balls. What is the **probability** to grab at the first try a white ball?

(3 pts. for the correct answer = 3 pts.)



50%

40%

60%

20%

4. A bottle and its cap together weight 104g; the bottle weights 100g more than the cap.
How much weights the cap? (4 pts. for the correct answer = 4 pts.)

b = bottle weight; c = cup weight

$$b + c = 104; b = c + 100: c + 100 + c = 104 \rightarrow c = \mathbf{2g}$$

5. Calculate the value of the expression. [3.16]

(3 pts. for the correct answer = 3 pts.)

$$\frac{\frac{3}{2} \cdot \left[\sqrt{(57-8)} - 24 \div 8 \right] + 6}{\frac{1}{7} \cdot 28 - \frac{7}{2}} = \mathbf{24}$$

6. At a dinner you count 5 people. If everybody wants to clink classes with everybody,
how many times do they clink the classes in total?

(3 pts. for the correct answer = 3 pts.)



5 times

10 times

9 times

25 times

20 times

7. Express the proportions in form of **percentages**:

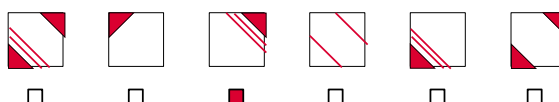
(2 pts. for each correct answer = 4 pts.)

a) 22 de 2.000 \rightarrow **1,1%**

b) 8 de 20 miles \rightarrow **40%**

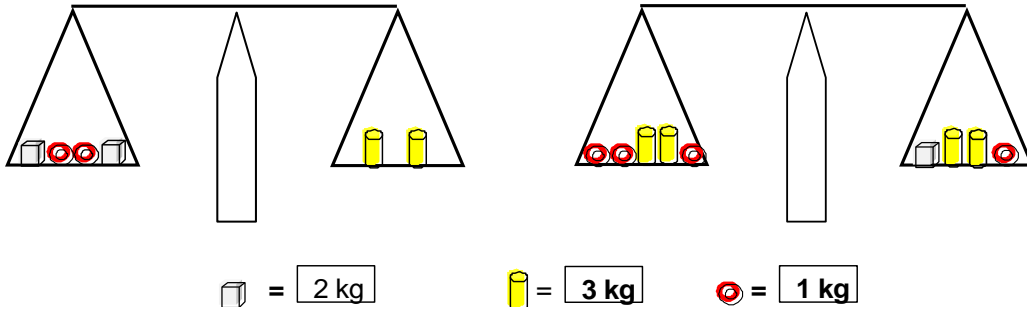
8. There are four figures in first row of the illustration. Their sequence is subject to a certain rule. Which of the six figures in the second row completes the sequence according to the rule? **Tick the box** below the correct figure.

(3 pts. for the correct answer = 3 pts.)



9. The balances are at equilibrium. What is the **weight of the elements**?

(4 pts. for the correct answer = 4 pts.)



$s =$ stick; $r =$ ring

$$4 + 2r = 2s \quad \rightarrow \quad 2s = 6 \quad \rightarrow \quad s = 3 \text{ kg}$$

$$3r + 2s = 2s + 1r + 2 \quad 2r = 2 \quad \rightarrow \quad r = 1 \text{ kg}$$

10. What is the relation of the four expressions? Arrange them by value in **increasing order** (as for instance $A < B < C < D$).

(3 pts. for each correct answer = 6 pts.)

a) $A = 10\%$; $B = \frac{0,5}{50}$; $C = 0,001$; $D = \frac{1}{25} \rightarrow C < B < D < A$

b) $A = \left(\frac{3}{4}\right)^2$; $B = \frac{3^2}{4}$; $C = \frac{3}{4^2}$; $D = \frac{3}{4} \rightarrow C < A < D < B$

11. When Anna was asked how old she is, she answered: Multiply my age by 99, add 208 to this product and subtract 99. Then will get exactly the result 1000. **How old** is Anna?:

(3 pts. for the correct answer = 3 pts.)

$$a = \text{Anna's age: } 99a + 208 - 99 = 1000 \rightarrow 99a = 891 \quad a = 9$$

12. **Calculate the new price** if the old price of 60 EUR is first increased by 15% and then decreased by 5%: (3 pts. for the correct answer = 3 pts.)

$$60 \cdot (1 + 15\%) \cdot (1 - 5\%) = 60 \cdot 1,15 \cdot 0,95 = \mathbf{65,55 \text{ EUR}}$$

13. The numbers in the following schemata are filled in according to a certain system.

Complete the schema by filling in the last **empty field**:

(3 pts. for each correct answer = 6 pts.)

a)

7	10	-3
4	4	0
1	-2	3

b)

3	9	27
-2	4	-8
1	1	1

14. Transform into **decimal numbers**:

(1 pt. for each correct answer = 3 pts.)

a) $1,5\% = \mathbf{0,015}$

b) $\frac{3}{15} = \mathbf{0,2}$

c) $\frac{1}{2} - 25\% = \mathbf{0,25}$

15. Old prices have been marked up/down obtaining the new prices. What are the **percentages** of increase or decrease, respectively?

(2 pts. for each correct answer = 4 pts.)

a) Old Price: 24 EUR; New Price: 20,40 EUR \rightarrow **- 15%**

b) Old Price: 1,80 EUR; New Price: 2,25 EUR \rightarrow **+ 25%**