# 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) $\dfrac{2}{5} - \dfrac{4}{3} \cdot \left( -\dfrac{9}{8} \right) = \dfrac{\mathbf{19}}{\mathbf{10}}$

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

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.)**
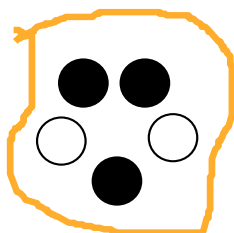
 ☐ 50%  ■ 40%  ☐ 60%  ☐ 20%

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

   $c = \mathbf{2g}$

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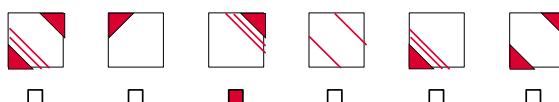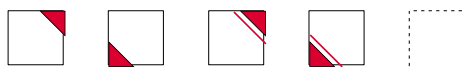
   **(2 pts. for each correct answer = 4 pts.)**

   a)  22  de  2.000  → **1,1%**
   b)  8  de  20 miles  → **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.**)



$$\square = \boxed{2\ kg} \qquad \square = \boxed{3\ kg} \qquad \bigcirc = \boxed{1\ kg}$$
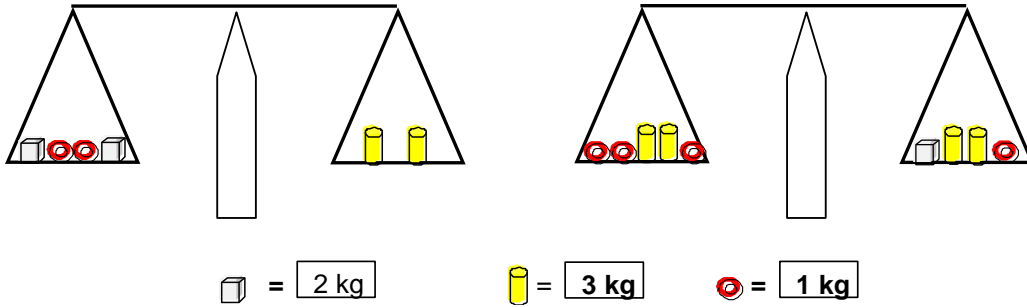
*s*= stick; *r* = ring

*s* = **3 kg**

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

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

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* = Anna's age:      *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.**)

**65,55 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)   $\dfrac{3}{15} = \mathbf{0,2}$

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

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%**