

Solve in this handout

1. There are 3 points on a Cartesian plane: $A(-3, \frac{1}{3})$, $B(1, \frac{2}{3})$, $C(\frac{1}{3}, \frac{5}{6})$. Find the coordinates of the vectors ...

$$\vec{a} = \overrightarrow{AB} = (\quad , \quad) \quad \vec{b} = \overrightarrow{BC} = (\quad , \quad) \quad \vec{c} = \overrightarrow{AC} = (\quad , \quad)$$

$$\vec{a} + \vec{b} = (\quad , \quad)$$

$$\vec{a} + 2\vec{c} = (\quad , \quad)$$

$$\vec{c} - \vec{b} = (\quad , \quad)$$

2. There is a two-cup scale and 9 coins. This time there are **two** fake coins, that are lighter than the real ones. How would you find the fake ones using the minimal number of weighings? **Remember**, scale might be in equilibrium if all coins are real OR there is one fake coin in each cup!

3. How would you add 3D vectors $\vec{x} = (1, -1, 3)$ and $\vec{y} = (-2, 4, 2)$?

4. Unit conversions, decimal fractions:

30 cm = _____ dm

30 cm² = _____ dm²

30 cm³ = _____ dm³

0.2 kg = _____ g

25 cm = _____ m

25 cm = _____ mm

2500 g = _____ kg

40 dm = _____ mm

1 hour = _____ sec

5. A snail can ruin all grapes in a garden in 12 days. A wasp can do the same damage in 15 days. A squirrel will ruin the grapes in just 10 days. How fast will the garden be ruined ...

a). ... by all three animals if they hate each other and never eat from the same plant?

b). ... if the Gardner poisons the snail?

Solve in your notebook

6. Calculate: a) $\frac{\frac{2}{7} \times 2\frac{5}{8}}{1\frac{1}{2} - \frac{1}{4}} =$

b) $\frac{1}{1 + \frac{1}{1 + \frac{1}{3}}} =$

7. Solve the mathematical riddles in which identical digits were substituted with identical letters:

a). AT × IT = 2016

b). OF × OFF = 2016

8. Solve the equations:

a). $\frac{2}{1 + \frac{2}{x}} = 1$

*** b).** $\frac{2}{1 + \frac{2}{x}} = \frac{1}{5}$

c). 621 - 12x = 333

Answers: 5a: 4 days; 5b: 6 days; 6a: 3/5; 6b: 4/7; 7a: 24 × 84 OR 36 × 56; 7b: 14 × 144; 8a: x = 2; 8b: x = 2/9; 8c: x = 12