

Mixed Fractions, Decimals and Percentages Questions

1. There are 60 beads in a bag. The beads are red, yellow or blue.
40% of the beads are blue.
 $\frac{5}{12}$ of the beads are red.
How many beads are yellow?
2. In the sale, jumpers are on the offer "buy 2, save $\frac{1}{3}$ of the price". Jeans are also currently 30% off.
Jumpers cost £45 each. Jeans cost £50.
What is the cost of buying 2 jumpers and 2 pairs of jeans?

3. A family discount card offers deals for the cinema. The card states:

<p style="text-align: center;"><u>Family discount card</u></p> <p style="text-align: center;">45% off all adult tickets</p> <p style="text-align: center;">Children save $\frac{2}{5}$ off of full price tickets</p>

The cost of an adult ticket is £10. A child's ticket is £6.

- (a) How much will it cost to buy 2 adult tickets and 3 children's tickets?
 - (b) The cost of a family discount card is £40 per year. How many times in the same year would 2 adults and 3 children need to go before you start to save money on the cost of the card? (Hint: find the cost of the tickets without the discount card)
4. £54 inheritance money is split between Abi, Babs and Caz in the ratio 1:3:2.
Abi gives 80% of her money to charity.
Babs gives 0.25 of her money to the same charity.
Caz also gives $\frac{2}{9}$ of her money to the charity.
 - (a) How much money in total do the girls donate to charity?
 - (b) Express the amount of money they give to charity as a percentage of the inherited amount to 1 decimal place.
 5. At the Redbridge School, $\frac{1}{3}$ of pupils have a pet dog, $\frac{2}{5}$ have a cat and $\frac{1}{15}$ have a hamster.
The rest have no pets.
 - (a) What fraction of the children has no pet? Write this in its simplest form.
 - (b) There are 250 pupils at the Redbridge School. How many children have no pets?
 - (c) At the Bluebell School, 23% have no pets. What percentage increase of pupils at the Bluebell School have no pets compared to the Redbridge School?

Solutions

1. $(40 \div 100) \times 60 = 24$ blue beads
 $(5 \div 12) \times 60 = 25$ red beads
 $60 - (24 + 25) = 11$ yellow beads

2. Jumpers: $2 \times \text{£}45 = \text{£}90$

$$\frac{1}{3} \text{ of } \text{£}90 = \text{£}30$$

$$\text{£}90 - \text{£}30 = \text{£}60$$

Jeans: $2 \times \text{£}50 = \text{£}100$

$$(30 \div 100) \times \text{£}100 = \text{£}30$$

$$\text{£}100 - \text{£}30 = \text{£}70$$

Total: $\text{£}60 + \text{£}70 = \text{£}130$

3. (a) Adults: $2 \times \text{£}10 = \text{£}20$

$$(45 \div 100) \times \text{£}20 = \text{£}9$$

$$\text{£}20 - \text{£}9 = \text{£}11$$

Children: $3 \times \text{£}6 = \text{£}18$

$$\frac{2}{5} \text{ of } \text{£}18 = \text{£}7.20$$

$$\text{£}18 - \text{£}7.20 = \text{£}10.80$$

Total: $\text{£}11 + \text{£}10.80 = \text{£}21.80$

(b) Cost without discount = $\text{£}20 + \text{£}18 = \text{£}38$

	No card	With card
1 trip	$1 \times \text{£}38 = \text{£}38$	$\text{£}40 + (1 \times \text{£}21.80) = \text{£}61.80$
2 trips	$2 \times \text{£}38 = \text{£}76$	$\text{£}40 + (2 \times \text{£}21.80) = \text{£}83.60$
3 trips	$3 \times \text{£}38 = \text{£}114$	$\text{£}40 + (3 \times \text{£}21.80) = \text{£}105.40$

3 trips before the discount card starts being cheaper than regular price

4. (a) $1 + 3 + 2 = 6$ shares

$$\text{£}54 \div 6 = \text{£}9 \text{ per share}$$

$$\text{£}9 \times 1 : \text{£}9 \times 3 : \text{£}9 \times 2 = \text{£}9 : \text{£}27 : \text{£}18$$

Abi: $(80 \div 100) \times \text{£}9 = \text{£}7.20$

Babs: $0.25 \times \text{£}27 = \text{£}6.75$

Caz: $\frac{2}{9} \times \text{£}18 = \text{£}4$

Total = $\text{£}7.20 + \text{£}6.75 + \text{£}4 = \text{£}17.95$

(b) $(17.95 \div 54) \times 100 = 33.24074074 = 33.2\%$

5. (a) $\frac{1}{3} + \frac{2}{5} + \frac{1}{15} = \frac{5}{15} + \frac{6}{15} + \frac{1}{15} = \frac{12}{15} = \frac{4}{5}$

$$1 - \frac{4}{5} = \frac{1}{5}$$

(b) $\frac{1}{5} \times 250 = 50$ children

(c) $\frac{1}{5} = 20\%$

$$23\% - 20\% = 3\% \text{ more}$$