

Guy Fawkes Night Percentage Problems



- 1) Lola is organising a bonfire event. She has a target to fill the venue to 95% of its capacity. The capacity of the venue is 1400.
- a. 628 people have bought advance tickets.
How many other people need to buy tickets for Lola to reach her capacity target?

- b. At full capacity, the venue Lola has chosen only has enough space for 22% of attendees to park a car.
How many cars can be parked at the bonfire venue?

- c. 45% of the people visiting the bonfire event are children.
Write the ratio of adults to children at the event.

- 2) Jackson is selling toffee apples at the bonfire event. He bought 120 toffee apples for £108 with the aim of selling them for a profit.
- a. How much did Jackson pay for each toffee apple?

- b. How much would Jackson need to sell each toffee apple for to make a 20% profit?

- c. Jackson wants to spend his profits from the toffee apples by buying his girlfriend a ticket to the bonfire event. A ticket to the bonfire event costs £8.90. How many toffee apples would Jackson need to sell to have enough **profit** to buy his girlfriend a ticket?

- 3) Mike is selling hotdogs at the bonfire event. He started out selling the hotdogs at £3.00 each. By 9pm, Mike is starting to run out of hotdogs, so he increases the price to £3.90.
- a. If Mike sold 57 hotdogs before 9pm, and 21 hotdogs after, how much money did he make?

- b. What percentage of Mike's hotdogs were sold before 9pm?

- c. What is the percentage increase of the hotdog price after 9pm?

- 4) Hannah runs the burger stall next door to Mike's Hotdogs. She has also thought of increasing the price as time goes on.
- a. Hannah starts selling her burgers at 6pm for £2.60, and increases the price by an extra 5% every 45 minutes.
How much will the burgers cost at 10pm?

Hannah's competitor Farzia increases the price of her burgers by 9% at 9pm. The increased price of Farzia's burgers from 9pm is £3.27.

Whose burgers are better value at?

- b. 8pm _____
- c. 8.30pm _____
- d. 9pm _____
- e. 9.45pm _____

Explain your answer

Discussion question

Boris is in charge of choosing the firework supplier for the bonfire event.

Crackleworks Ltd. sells fireworks for £16 each. 97% of their fireworks go off successfully.

Short Fuse Ltd. sells fireworks for £14 each, but 15% of their fireworks are duds.

<p>HINT</p> <p>Think about what would happen if Boris bought 100 fireworks</p>

- a. Which firework company should Boris use for the event and why? Explain your answer.

- b. Does the number of fireworks that Boris chooses to buy have an effect your answer?

ANSWERS

1a) $1400 \times 0.95 = 1330$
 $1330 - 628 = \mathbf{702}$

b) $1400 \times 0.22 = \mathbf{308}$

c) 55:45
 $\mathbf{11:9}$

2a) $\pounds 108 \div 120 = \mathbf{\pounds 0.90}$

b) 20% of $\pounds 0.90 = \pounds 0.18$
 $\pounds 0.90 + \pounds 0.18 = \mathbf{\pounds 1.08}$

c) $\pounds 1.08 - \pounds 0.90 = \pounds 0.18$ (profit per toffee apple)
 $\pounds 8.90 \div \pounds 0.18 = 49.44$
 Round to $\mathbf{50}$ toffee apples

3a) $(57 \times \pounds 3.00) + (21 \times \pounds 3.90) = \mathbf{\pounds 252.90}$

b) $57 + 21 = 78$
 $57 \div 78 = 0.73$
 $0.73 \times 100 = \mathbf{73\%}$

c) $\pounds 3.90 \div \pounds 3.00 = 1.3$
 $\mathbf{30\%}$ increase

4)

Time	Hannah's price	Farzia's price
6.00 pm	£2.60	£3.00
6.45 pm	£2.73	£3.00
7.30 pm	£2.87	£3.00
8.15 pm	£3.01	£3.00
9.00 pm	£3.16	£3.27
9.45 pm	£3.32	£3.27

a) At 10pm, Hannah's burger will still be $\mathbf{\pounds 3.32}$

b) \mathbf{Hannah}

c) \mathbf{Farzia}

d) \mathbf{Hannah}

e) \mathbf{Farzia}

Discussion Question

Crackleworks Ltd.

$\pounds 16.00 \div 0.97 = \pounds 16.49$ per successful firework

Short Fuse Ltd.

$\pounds 14.00 \div 0.97 = \pounds 16.47$ per successful firework

Short Fuse Ltd. is better value by $\pounds 0.02$ for every successful firework.

If Boris buys 1000 fireworks from Short Fuse Ltd, he will save $\pounds 20$ from the price of $\pounds 16,490$, but 150 fireworks will fail.

Encourage class to discuss their answer: Is it better to spend slightly more money to have a more successful show?