

Worksheet 13: Christmas Questions!

Mostly non-calculator. Do what you have time for.

Section 1: Number skills (functional)

- 1) Find 34×91 using any non-calculator method
- 2) Work out $\frac{3}{4} + \frac{2}{3}$
- 3) Work out 1.3×4.7 using any non-calculator method
Hint: forget the decimal points, multiply, then count back
- 4) Nigel is paid £8.50 per hour.
One busy Christmas eve, he works a 9 hour shift.
How much should he be paid for the shift?
- 5) “Special Offer: One third off all prices today”
A coat usually costs £72.99.
Work out the special offer price of the coat.
- 6) Work out $742 \div 7$ using a 'bus stop' division
- 7) “Special Thursday: take 20% of all marked prices today”
The marked price on the jumper was £35.
By how much is the jumper reduced?
- 8) Write 0.6 as a fraction in its simplest form
- 9) Write 0.8 as a percentage
- 10) Algernon is selling recycled Christmas cards
Each pack of cards is sold for £1.80
He is paid 27p for each worth of Christmas cards he sells.
Work out 27p as a percentage of £1.80
- 11) Hester wins £60 in the office sweep stake
She decides to donate a third of the money to charity
She puts half of what is left into the coffee fund for next year
What does Hester have left to buy cakes with?

Section 2: Data and averages

12) The ages of 7 people in a minibus are

12, 12, 12, 13, 15, 17, 45

Calculate the mean age of the people in the minibus

13) Write down 5 numbers that have a median of 12 and a range of 4

Hint: make 5 spaces on some scrap paper like in a game of hangman

14) Lionel is selling dresses on his market stall.

He sells 4 dresses at £10 each

He sells another 7 dresses at £8 each

Then he sells 3 dresses at £6 each

How much money has he taken all together?

15) Herbert is researching the diameter in metres of Christmas logs

He records the following data

0.06, 0.61, 0.059, 0.061, 0.6, 0.59, 0.061

Find the median diameter for a Christmas log

16) Below are the temperatures in °C for a week one crisp January

-8 3 5 -7 -3 3 0

Work out the mean temperature

17) Monalisa is collecting data about people's eye colour

She finds the following colours

blue blue brown brown brown

blue brown brown blue hazel

blue brown brown brown green

blue hazel brown brown green

a) Draw up a tally chart showing the frequencies of the eye colours

b) What is the modal eye colour

c) Algernon wants to work out the mean eye colour.

Write a sentence explaining why that is impossible

Section 3: Algebra

19) Simplify $e + e + e + e - e$

20) Simplify $f \times f \times f \times f \times f$

21) Solve $\frac{p}{4} = 5$

22) Solve $m + 9 = 40$

23) Solve $n - 7 = 3$

24) Solve $3x + 1 = 19$

25) Albertine thinks of a number, doubles it and then takes four away.

Her answer is 6

What number did Albertine think of?

Challenge: can you write an equation in algebraic notation for this question?

26) Solve $2x - 10 = 4$

27) Simplify $y^2 + y^2 + y^2 + y^2$

28) Simplify $3a + 4b + a + b$

29) Simplify $2x + 3y - x + 2y$

30) Solve $5x - 1 = 44$

31) Solve $2x + 10 = 4$

Hint: negative solution

32) Solve $4x + 5 = 11$

Hint: solution is a mixed number

33) Harinder thinks of a number and adds three

Then she multiplies the answer by 2

Her answer is 14

What number did Harinder think of?

Challenge: can you write an equation in algebraic notation for this question?

Section 4: Abstract number (factors &c)

Check Topic Guide 1 for the definitions of underlined words

35) Write down all the factors of 48

Hint: factors are small. For instance 12 is a factor of 48.

36) Write down the first 5 prime numbers

37) Write down a square number between 30 and 40

38) Look at the list of integers below

12, 13, 15, 16, 18, 27, 35, 50, 64, 70, 100

a) Write down a prime number in the list

b) Write down a cube number in the list

c) Write down all the multiples of 7 that are in the list

d) Write down a factor of 100 in the list

39) What is the lowest common multiple of 8 and 12?

Hint: multiples are massive

40) What is the highest common factor of 64 and 48?

Hint: factors are smaller

41) Algernon is at the bus stop early one morning

The 51 comes at 7am and every 12 minutes after that

The 33 comes at 7:05 and every 20 minutes after that

At what time after 7am will Algernon see a 51 and a 33 arrive at the same time?

42) Work out $\frac{3}{4} + \frac{1}{6}$

43) What is $\frac{3}{4}$ of 60?

44) Find $\frac{2}{3} \times \frac{4}{5}$

45) Work out $1 - \left(\frac{2}{9}\right)^2$