Worksheet - Decimals and percentages

Year: Year 6 · 20

Show your working.

Question 1

Question 1 – Place value with decimals *(Section A · Skills practice)*

Ravi is exploring decimals. Look at the number 4.263 and answer these questions.

a. What is the value of the digit 6 in 4.263?
b. Put these numbers in order, smallest first: 0.45, 0.5, 0.405, 0.054.
c. Write "three tenths and five thousandths" as a decimal.
d. Which digit is in the hundredths column of 7.381?

Question 2

Question 2 – Rounding decimals *(Section A · Skills practice)*

Round each of these numbers as asked. Underline the digit you are looking at before you decide to round up or down.

a. 7.846 to 1 decimal place
b. 7.846 to 2 decimal places
c. 7.846 to the nearest whole number
d. 12.095 to 2 decimal places
e. 0.9996 to 3 decimal places

Question 3

Question 3 – Multiplying and dividing by 10, 100 and 1 000 *(Section A · Skills practice)*

Work these out. Remember that the digits move, but the decimal point stays where it is.

a. 3.4 × 10
b. 0.56 × 100
c. 4.7 ÷ 10
d. 0.062 × 1 000
e. 85 ÷ 100
f. 7.2 ÷ 1 000

Question 4

Question 4 – Multiplying decimals by whole numbers *(Section A · Skills practice)*

Use a written method. Estimate first by rounding.

a. 2.4 × 3
b. 1.25 × 6
c. 4.6 × 12
d. 0.35 × 8
e. 7.08 × 5

Question 5

Question 5 – Dividing decimals *(Section A · Skills practice)*

Work out each division. Check each answer by multiplying.

a. 8.4 ÷ 4
b. 15.6 ÷ 12
c. 7.5 ÷ 5
d. 9.45 ÷ 3
e. 0.72 ÷ 8

Question 6

Question 6 – Fractions, decimals and percentages *(Section A · Skills practice)*

Complete the table by writing each amount as a fraction, a decimal and a percentage. Give fractions in their simplest form.

Fraction	Decimal	Percentage
$\frac{3}{4}$	?	?
$\frac{7}{20}$	?	?
?	0.6	?
?	?	45%
$\frac{5}{8}$	?	?

Question 7

Question 7 – The weekly shop *(Section B · Real-life practice)*

Mrs Carter buys these items at the supermarket. Look at the price list and answer the questions.

Item	Price each	Number bought
Cheese	£2.45	3
Bread	£1.15	2
Apples (bag)	£2.20	2

Item	Price each	Number bought
Milk	£0.95	4

a. Work out the cost of each item.
b. What is the total bill?
c. She pays with a £20 note. How much change does she get?
d. Mrs Carter has a coupon for 10% off the total bill. How much does she save, and what does she pay?

Question 8

Question 8 – Sale at the sports shop *(Section B · Real-life practice)*

A sports shop is having a sale. Each item is reduced by the percentage shown.

Item	Original price	Reduction
Trainers	£45	20%
Football shirt	£36	25%
Rucksack	£18	10%
Swimming bag	£24	35%

a. Work out the sale price of the trainers.
b. Work out the sale price of the football shirt.
c. Work out the sale price of the rucksack and the swimming bag.
d. Zoe buys the trainers and the shirt. How much does she spend altogether?
e. What is the total saving on all four items if you buy one of each?

Question 9

Question 9 – Spelling tests *(Section B · Real-life practice)*

Four pupils did spelling tests with different numbers of words. Their scores are in the table.

Pupil	Score	Out of
Lily	36	40
Omar	27	30
Priya	17	20
Max	21	25

a. Write each score as a fraction out of 100 and as a percentage.
b. Who got the highest percentage? Who got the lowest?
c. Max says "I got the fewest words wrong, so I did best". Is he right? Show your working.

Question 10

Question 10 – Filling up the car *(Section B · Real-life practice)*

At a petrol station, petrol costs £1.45 for each litre. Mr Singh puts 38 litres in his car.

a. How much does the petrol cost? Estimate first.
b. He pays with a £100 note. How much change does he get?
c. Next week the price falls by 4p per litre. How much would 38 litres cost then?
d. His car travels 12.5 km for each litre. How far can it travel on 38 litres?

Question 11

Question 11 – Baking for the fair *(Section B · Real-life practice)*

Hana is baking for the school fair. A bag of flour weighs 1.5 kg. She uses 0.75 kg of flour for each batch of cakes.

a. How much flour is needed for 4 batches?
b. How many bags of flour does she need for 4 batches?
c. She has 2.4 kg of sugar and packs it equally into 8 bags. How much sugar is in each bag?
d. Each bag of sugar is sold for £0.85. How much money does she make from the 8 bags?

Question 12

Question 12 – The swimming gala *(Section B · Real-life practice)*

Four swimmers take part in a 50 m race. Their times, in seconds, are in the table.

Swimmer	Time (seconds)
Aisha	31.62
Ben	31.26
Cara	32.05
Dev	31.6

a. Put the times in order, fastest first.
b. What is the difference between the fastest time and the slowest time?
c. The four swimmers make a relay team. What is their total time?
d. Round each time to the nearest second.

Question 13

Question 13 – Saving money *(Section B · Real-life practice)*

Ella has £250 in a savings account. The bank pays 2% interest at the end of the year.

a. How much interest does she earn after one year?
b. How much money is in the account then?
c. Ella wants to buy a laptop for £280. How much more money does she need after one year?
d. She adds a gift of 10% of the laptop price from her gran. Is that enough?

Question 14

Question 14 – The class survey *(Section B · Real-life practice)*

Mrs Evans asks 80 pupils in Year 6 to choose their favourite sport. The results are in the table.

Sport	Percentage of pupils
Football	35%
Swimming	25%
Netball	15%
Tennis	10%
Other	?

a. What percentage chose "Other"?
b. How many pupils chose football?
c. How many pupils chose swimming, and how many chose netball?
d. How many more pupils chose football than tennis?

Question 15

Question 15 – The school disco *(Section C · Problem solving)*

Year 6 plans a disco. The treasurer writes down the costs. The pupils sell 120 tickets at £2.50 each.

Item	Cost
Hire of the hall	£85
DJ	£60
Snacks (8 boxes at £6.75 each)	?
Decorations	£14.50

a. Work out the money from the ticket sales.
b. Work out the cost of the snacks.
c. Work out the total cost of the disco.
d. The school pays a deposit of 20% of the hall hire. How much is the deposit?
e. Work out the profit. What percentage of the ticket sales is the profit?
f. The profit is shared equally between 5 school clubs. How much does each club get?

Question 16

Question 16 – Paying for a phone *(Section C · Problem solving)*

A shop sells a phone for £480. In a sale, the price is reduced by 15%. Sara pays for the phone over 12 equal monthly payments with no interest. She also buys a case for £12.50 and a charger for £9.99.

a. How much is 15% of £480?
b. What is the sale price of the phone?
c. How much is each monthly payment?
d. What is the total cost of the case and charger?
e. Sara pays for the case and the charger at the till with a £50 note. How much change does she get?
f. Work out the cost of the phone, the case and the charger together. What percentage of this total is the phone? Give your answer to the nearest whole number.

Question 17

Question 17 – At the garden centre *(Section C · Problem solving)*

Mr Okoye buys plants and compost at a garden centre. He buys 12 plants at £3.50 each and 5 bags of compost at £7.20 each. The garden centre gives him a discount of 15% on the whole bill.

a. How much do the plants cost?
b. How much does the compost cost?
c. What is the total before the discount?
d. How much is the discount?
e. How much does he pay?
f. He pays with two £50 notes. How much change does he get? Express the change as a percentage of the amount he gave (£100).

Question 18

Question 18 – Who is right? *(Section C · Problem solving)*

Four friends are comparing numbers. Read what each friend says.

a. Amir says that 0.5 is smaller than 0.45 because 5 is smaller than 45. Is he right? Explain.
b. Beth says that 0.7 is the same as 7%. Is she right? Write 0.7 as a percentage.
c. Carl says "25% of 80 is the same as 80 ÷ 4". Is he right? Show your working.
d. Dina says "$\frac{3}{4}$ is bigger than 70% and smaller than 0.8". Is she right? Show your working.
e. Put 0.7, 65%, $\frac{3}{4}$ and 0.07 in order, smallest first.

Question 19

Question 19 – Which deal is best? *(Section C · Problem solving)*

Three shops sell the same bicycle, which usually costs £84. Their offers are in the table.

Shop	Offer
Shop A	25% off
Shop B	$\frac{1}{3}$ off
Shop C	£8 off, then 20% off the new price

a. Work out the price in Shop A.
b. Work out the price in Shop B.
c. Work out the price in Shop C.
d. Which shop has the cheapest bicycle? How much do you save compared with the dearest?
e. Shop C advertises "28% off". Is this true? Explain.

Question 20

Question 20 – Challenge: working backwards *(Section D · Challenge)*

Use what you know about percentages to solve these puzzles.

a. 30% of a number is 21. What is the number? What is 80% of the number?
b. A jacket costs £60 after a 20% reduction. What was its original price?
c. The price of a game is £200. It increases by 10% and then decreases by 10%. Is the final price £200? Work it out.