Worksheet - The four operations, order of operations and long division

Year: Year 6 · 20

Show your working.

Question 1

Question 1 – Long multiplication *(Section A · Skills practice)*

Priya is practising long multiplication. For each question, first write an estimate by rounding, then work out the exact answer.

a. 346 × 27
b. 1 258 × 34
c. 4 023 × 56
d. Use your answer to part (a) to work out 346 × 270.

Question 2

Question 2 – Long division *(Section A · Skills practice)*

Work out each division. Show the multiples of the divisor that you use.

a. 756 ÷ 12
b. 1 904 ÷ 14
c. 2 345 ÷ 15 (give the remainder as a whole number)
d. 3 000 ÷ 16 (give the answer as a decimal)

Question 3

Question 3 – Remainders as fractions and decimals *(Section A · Skills practice)*

Sam divides 487 by different numbers. Give each answer in the form asked for.

a. 487 ÷ 12 as a whole number with a remainder
b. 487 ÷ 12 as a mixed number
c. 487 ÷ 8 as a decimal
d. Which is bigger, 487 ÷ 8 or 487 ÷ 12? Explain without calculating.

Question 4

Question 4 – Order of operations *(Section A · Skills practice)*

Use BIDMAS to work out each answer. Write each step on a new line.

a. 8 + 4 × 3

b. $(8 + 4) \times 3$
c. $20 - 12 \div 4 + 1$
d. $5 \times (9 - 4) + 10 \div 2$
e. $2 + 3^2 \times 4$

Question 5

Question 5 – Factors, multiples and common factors *(Section A · Skills practice)*

Work out each answer. Listing numbers in order will stop you missing any.

a. List all the factors of 36.
b. Find the common factors of 24 and 36, and say which one is the highest common factor (HCF).
c. Find the lowest common multiple (LCM) of 4 and 6.
d. Write down the first four multiples of 9.
e. Which multiple of 7 is between 50 and 60?

Question 6

Question 6 – Primes, squares and cubes *(Section A · Skills practice)*

Use what you know about prime numbers, square numbers and cube numbers.

a. Which of these are prime numbers? 23, 27, 31, 39, 51, 53
b. Write all the prime numbers between 40 and 60.
c. Work out 12^2 and 4^3.
d. What is the square root of 81?
e. Write down the first five square numbers and the first four cube numbers.

Question 7

Question 7 – The school trip coaches *(Section B · Real-life practice)*

Year 6 is going on a trip to a science museum. There are 342 pupils and 18 adults. Each coach holds 52 passengers and hiring one coach costs £385.

a. How many people are going on the trip altogether?
b. How many coaches are needed? Explain why you cannot just round down.
c. What is the total cost of the coaches?
d. The museum charges £6 for each pupil. Adults go free. Work out the total cost of the tickets.
e. Work out the total cost of the trip, and the cost for each pupil, to the nearest penny, if the cost is shared equally between the 342 pupils.

Question 8

Question 8 – Pencils for the classes *(Section B · Real-life practice)*

A school buys 24 boxes of pencils. There are 36 pencils in each box. The pencils will be shared equally between the 18 classes in the school.

a. How many pencils does the school buy?
b. How many pencils does each class receive?
c. Next year the school will have 20 classes. If it buys the same number of pencils, how many will each class receive and how many pencils will be left over?
d. Write one calculation that uses brackets to work out the answer to part (b) in one go.

Question 9

Question 9 – The bakery *(Section B · Real-life practice)*

A baker makes 23 trays of rolls. Each tray holds 15 rolls. She sells the rolls in bags of 6 for 180p a bag.

a. How many rolls does she bake?
b. How many full bags can she fill? How many rolls are left over?
c. How much money, in pounds, does she take if she sells all the full bags?
d. The baker eats the left-over rolls. A different day she bakes 28 trays instead. How many full bags can she fill then?

Question 10

Question 10 – Match day tickets *(Section B · Real-life practice)*

A football club sells 1 250 tickets for a match. Adult tickets cost £27, and the club gives a discount of £7 on each child ticket, so child tickets cost £20. Of the 1 250 tickets sold, 1 025 were adult tickets.

a. How many child tickets were sold?
b. How much money did the club take from adult tickets?
c. How much money did the club take from child tickets?
d. How much did the club take altogether? Use rounding to check your answer.

Question 11

Question 11 – The cinema seats *(Section B · Real-life practice)*

A cinema has 8 large screens and 2 small screens. Each large screen has 135 seats and each small screen has 90 seats.

a. Write a calculation using brackets that gives the total number of seats, then work it out.
b. Every screen shows 6 films a day. How many seats are there to fill in one day?
c. A ticket costs £8. How much money does the cinema take if every seat is sold for every film?

Question 12

Question 12 – Planting bulbs *(Section B · Real-life practice)*

Mr Patel is planting daffodil bulbs in the school garden. He plants 15 rows with 24 bulbs in each row. The bulbs are sold in packs of 25 and each pack costs £4.

a. How many bulbs does he need?
b. How many packs must he buy?
c. How many bulbs are left over?
d. What is the total cost of the packs?

Question 13

Question 13 – The bus timetable *(Section B · Real-life practice)*

Two bus routes leave the bus station at 8:00 am. Route A buses leave every 12 minutes and route B buses leave every 15 minutes.

a. List the first five times (in minutes after 8:00 am) at which route A buses leave.
b. List the first five times at which route B buses leave.
c. When will a bus from each route leave together again?
d. How many times between 8:00 am and 12:00 noon (including 8:00 am) will buses on both routes leave together?

Question 14

Question 14 – Party bags *(Section B · Real-life practice)*

Hana is making party bags. She has 72 balloons and 48 party hats. Every bag must have the same number of balloons and the same number of hats, and nothing is left over.

a. Write down the factors of 72 and the factors of 48.
b. What is the greatest number of party bags she can make?
c. How many balloons and how many hats does each bag contain?
d. Hana finds 12 extra balloons. What is the greatest number of identical bags now?

Question 15

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

Year 6 held a school fair to raise money for four charities. The table shows what they sold and how much each item cost.

Item	Number sold	Price each
Cakes	126	£2
Plants	38	£6

Item	Number sold	Price each
Second-hand books	215	£1
Car washes	47	£5

The pupils spent £248 on ingredients, pots and soap. They want to raise at least £700 after paying for these costs.

a. Work out how much money each item raised.
b. Work out the total money raised and use rounding to check it.
c. Work out the profit after paying the £248.
d. Did they reach their target of £700? If not, how much were they short?
e. The profit is shared equally between the four charities. How much does each charity get?

Question 16

Question 16 – The long train *(Section C · Problem solving)*

A train has 12 carriages. When it is full, it carries 1 764 passengers. All the carriages hold the same number of passengers. The railway company runs 28 trains of this size every day on one route. A one-way ticket costs £35.

a. How many passengers does each carriage hold?
b. A different train has 15 carriages and each holds the same number as before. How many passengers can it carry?
c. What is the greatest number of passengers that 28 full trains can carry in one day?
d. What would the ticket money be for 28 completely full trains?
e. Estimate your answer to part (c) by rounding, to show that it is sensible.

Question 17

Question 17 – Who is right? *(Section C · Problem solving)*

Four pupils work out the same three calculations. Their answers are in the table.

Calculation	Amy	Ben	Cara	Dev
$7 + 3 \times 4$	40	19	19	19
$(15 - 3) \div 4 + 2$	5	5	2	5
$18 - 6 \div 3 \times 2$	14	8	14	14

a. Work out the correct answer to each calculation.
b. Which pupil got all three right?
c. Explain the mistake Amy made in the first calculation.
d. Explain the mistake Cara made in the second calculation.
e. Explain the mistake Ben made in the third calculation.
f. Put one pair of brackets in $18 - 6 \div 3 \times 2$ so that the answer is 8.

Question 18

Question 18 – Mystery numbers *(Section C · Problem solving)*

Rosa writes riddles for her friends to solve. Use your knowledge of prime numbers, squares, factors and multiples to find each secret number.

a. I am a prime number between 70 and 90. The sum of my digits is 8.
b. I am a square number between 30 and 60. I am also a multiple of 6.
c. I am a common multiple of 6 and 8. I am more than 50 and less than 100.
d. I am a two-digit number. I have exactly three factors. One of my factors is 7.
e. Rosa says there is only one even prime number. Which one is it? Why is every other even number not prime?

Question 19

Question 19 – Hiring the village hall *(Section C · Problem solving)*

The village hall is hired for a series of weekend events. The hire costs £34 each hour. A hire contract is for 15 weekends, with 6 hours on each weekend. The hall committee also pays a cleaner £28 each weekend.

a. How much does the hall hire cost altogether?
b. How much does the cleaner cost altogether?
c. What is the total cost for the hall and the cleaner?
d. The committee shares the total cost equally between 12 families. How much does each family pay?
e. The committee then raises £1 400 from tickets. Is this enough to cover the total cost? Explain.

Question 20

Question 20 – Challenge: brackets *(Section D · Challenge)*

Look at the calculation $4 + 6 \times 2 - 1$. Without any brackets the answer is 15. By putting one pair of brackets in different places, Joe can change the answer.

a. Put one pair of brackets in the calculation so that the answer is 19.
b. Put one pair of brackets in the calculation so that the answer is 10.
c. Joe says "there are only three different answers possible with one pair of brackets". List them all and check Joe's claim.
d. Now put one pair of brackets in $3 + 12 \div 3 \times 2$ so that the answer is 10.