

# Diagnostic Quiz

Number: Multiplication and  
Division  
Post-topic Test 2

Year 3

# Y3 Multiplication and Division 2

Name.....

Date..... Class.....

School..... Score.....



Please tick your answer to each question, like the example below. You can use any space left below a question for your working out, if you need it.

## Example question

3. What fraction of the shape is shaded blue?



Select the equivalent fraction below.

- a) ☐  $\frac{2}{5}$    b) ☐  $\frac{6}{4}$    c) ☒  $\frac{3}{5}$    d) ☐  $\frac{3}{2}$

1. \_\_\_\_ =  $3 \times 8$

a) ☐ 11

b) ☐ 24

c) ☐ 27

d) ☐ 21

2.  $36 \div 4 =$

a) ☐ 8

b) ☐ 9

c) ☐ 144

d) ☐ 40

---

3.  $72 = \underline{\quad\quad} \times 8$

a) ☐ 8

b) ☐ 64

c) ☐ 9

d) ☐ 7

---

4. Which of these statements is not correct?

a) ☐  $10 \times 3 = 5 \times 6$

b) ☐  $7 \times 4 = 4 \times 7$

c) ☐  $30 \div 2 = 60 \div 4$

d) ☐  $60 \div 5 = 5 \div 60$

---

**5.**  $673 \div 1 =$

- a) ☐ You can't divide by 1.
- b) ☐ 673
- c) ☐ 674
- d) ☐ 0
- 

**6.**  $5 \times 70 =$

- a) ☐ 350
- b) ☐ 35
- c) ☐ 3 500
- d) ☐ 210
- 

**7.**  $11 \times 50 =$

- a) ☐ 580
- b) ☐ 550
- c) ☐ 600
- d) ☐ 500
-

**8.**  $400 \div 80 =$

- a) ☐ 4
  - b) ☐ 5
  - c) ☐ 50
  - d) ☐ 0.5
- 

**9.** Complete this question mentally, or by using jottings (do not use a formal multiplication method):

$33 \times 8 =$

- a) ☐ 48
  - b) ☐ 240
  - c) ☐ 24
  - d) ☐ 264
- 

**10.** An odd number multiplied by an odd number will always equal...

- a) ☐ An odd number
  - b) ☐ An even number
  - c) ☐ An even or odd number
  - d) ☐ I don't know
-

**11.** Which of these calculations contains no errors?

a) ☐ 
$$\begin{array}{r} 54 \\ \times 8 \\ \hline 32 \\ 400 \\ \hline \end{array}$$

b) ☐ 
$$\begin{array}{r} 54 \\ \times 8 \\ \hline 32 \\ 400 \\ \hline 432 \\ \hline \end{array}$$

c) ☐ 
$$\begin{array}{r} 54 \\ \times 8 \\ \hline 62 \\ \hline \end{array}$$

d) ☐ 
$$\begin{array}{r} 54 \\ \times 8 \\ \hline 32 \\ 40 \\ \hline 72 \\ \hline \end{array}$$

---

**12.** Use a formal multiplication method to calculate  $67 \times 3 =$

a) ☐ 39

b) ☐ 181

c) ☐ An answer not given here.

d) ☐ 201



**13.**  $24 \div 3 =$

a) ☐ 8

b) ☐ 9

c) ☐ 6

d) ☐ 11

---

**14.**  $92 \div 4 =$

a) ☐ 22

b) ☐ 46

c) ☐ 21

d) ☐ 23



**15.**  $99 \div 8 =$

- a) ☐ 13
- b) ☐ 12
- c) ☐ 11 remainder 11
- d) ☐ 12 remainder 3



---

**16.** To knit a scarf for his toy mouse, Kian, who is 5, needs 18 cm of wool. To knit a scarf for his toy penguin, he will need 4 times as much wool. How much wool will Kian need for his penguin's scarf?

- a) ☐ 36 cm
- b) ☐ 72 cm
- c) ☐ 90 cm
- d) ☐ 62 cm





**17.** Leo is going on holiday with his 2 friends. He packs 6 sets of tops, and 4 sets of bottoms. Assuming he keeps them all clean, how many different outfits can he make?

- a) ☐ 10 combinations
  - b) ☐ 2 combinations
  - c) ☐ 24 combinations
  - d) ☐ 12 combinations
- 

**18.** The Year 3s in Oak Class have 4 lessons each day, which are each 70 minutes long. How many minutes do Oak Class spend in lessons each day?

- a) ☐ 210 minutes
- b) ☐ 140 minutes
- c) ☐ 280 minutes
- d) ☐ An answer not given here



**19.** Children's vests are packaged in packs of 4. The factory has made 44 vests today. How many packets can they make?

a) ☐ 176 packets

b) ☐ 12 packets

c) ☐ 11 packets

d) ☐ 13 packets



---

**20.** Pencils are sold in packs of 8. There are 35 children in Class 3. How many packs of pencils does the school need to buy so each child in Class 3 can have a pencil each?

a) ☐ 6

b) ☐ 4 remainder 3

c) ☐ 4

d) ☐ 5



# Y3 Multiplication and Division 2

## Answer Sheet

1. \_\_\_\_\_ =  $3 \times 8$

*Multiplication and division facts (3 times table).*

- a) Has added 3 to 8, rather than multiplied - indicating has misinterpreted the operation symbol.
- b) Correct answer.
- c) Does not have familiarity with the 3 times table. These multiplication facts are expected to be known in year 3.
- d) Does not have familiarity with the 3 times table. These multiplication facts are expected to be known in year 3.

2.  $36 \div 4 =$  \_\_\_\_\_

*Multiplication and division facts (4 times table).*

- a) Does not have familiarity with the 4 times table. These multiplication facts are expected to be known in year 3.
- b) Correct answer.
- c) Has multiplied by 4 rather than divided by 4.
- d) Has added 4, rather than divided by 4, indicating has misinterpreted the operation symbol.

3.  $72 =$  \_\_\_\_\_  $\times 8$

*Multiplication and division facts (8 times table).*

- a) Has confused  $8 \times 8$  with  $9 \times 8$  indicating does not have familiarity with the 8 times table. These multiplication facts are expected to be known in year 3.

- b) Has subtracted 8, indicating has misinterpreted the calculation and a lack of familiarity with questions where the missing number is after an equals sign.

- c) Correct answer.

- d) Has confused  $8 \times 7$  with  $8 \times 9$  indicating does not have familiarity with the 8 times table. These multiplication facts are expected to be known in year 3.

---

### 4. Which of these statements is not correct?

*Known multiplication facts and the inverse relationship between multiplication and division.*

- a) Does not understand the proportional relationship for multiplication. This could also indicate that children are not able to interpret questions which have calculations on both sides of the equals sign.
- b) Does not understand the commutative law for multiplication.
- c) Does not understand the proportional relationship for division. This could also indicate that children are not able to interpret questions which have calculations on both sides of the 'equals sign, and/or that they also believe that division is commutative.
- d) Correct answer.

---

5.  $673 \div 1 =$  \_\_\_\_\_

*Dividing by 1.*

- a) Believe you can't divide by 1, has possibly got confused with the fact that it is not possible to divide by 0.
  - b) Correct answer.
  - c) Has misread symbol and has added 1 rather than  $\div 1$ .
  - d) Has confused dividing by 1 with multiplication by 0.
-

6.  $5 \times 70 = \underline{\hspace{2cm}}$

*Multiplying a multiple of ten by a single digit number.*

- a) Correct answer.
  - b) Have scaled down to  $5 \times 7 = 35$  but have not scaled by up by  $\times 10$ .
  - c) Have scaled down to  $5 \times 7 = 35$  but have then scaled up by 100 not 10.
  - d) Has confused  $45 \times 7$  with  $3 \times 7$ .
- 

7.  $11 \times 50 = \underline{\hspace{2cm}}$

*Counting in multiples of 50.*

- a) Does not realise that a multiple of 50 which is less than 1000 will always end in 50 or 00.
  - b) Correct answer.
  - c) Has completed  $12 \times 50$ , i.e. counted on one more lot of 50 than needed.
  - d) Has completed  $10 \times 50$ , i.e. counted one lot of 50 less than is needed.
- 

8.  $400 \div 80 = \underline{\hspace{2cm}}$

*Dividing a multiple of 10 by a multiple of 10.*

- a) Has mistaken  $4 \times 8$  as equalling 40.
  - b) Correct answer.
  - c) Has scaled up after completing  $40 \div 8 = 5$ .
  - d) Has scaled down after completing  $40 \div 8 = 5$ .
- 

9. Complete this question mentally, or by using jottings (do not use a formal multiplication method):  $33 \times 8 = \underline{\hspace{2cm}}$

*Mental multiplication by partitioning.*

- a) Has completed  $3 \times 8 = 24$  and  $3 \times 8 = 24$  and added the results together - this shows a lack of awareness of place value - i.e. that  $33 \times 8$  is the same as  $30 \times 8$  and  $3 \times 8$ .

- b) Has just completed  $30 \times 8$  and has not then added the result of  $4 \times 8$ .
  - c) Has just completed  $3 \times 8$  and has not added the result of  $30 \times 8$ .
  - d) Correct answer.
- 

10. An odd number multiplied by an odd number will always equal...

*Multiplication rules and generalisations.*

- a) Correct answer.
  - b) Assumed that odd  $\times$  odd will always equal an even number - this suggests they have made a generalisations without exploring a range of different calculations.
  - c) Assumes that odd multiplied by odd gives even or odd number- this suggests they have made a generalisations without exploring a range of different calculations.
  - d) Pupil may not understand multiplication rules, or the question.
- 

11. Which of these calculations contains no errors?

*The expanded formal multiplication method.*

- a) Has used the distributive law to multiply each place in the number by 8, but does not total the two parts.
  - b) Correct answer.
  - c) Has interpreted as an addition question and/or has confused the formal addition method with the formal multiplication method.
  - d) Does not show any awareness of place value - treats  $50 \times 8$  as  $5 \times 8$ .
- 

12. Use a formal multiplication method to calculate:  $67 \times 3 = \underline{\hspace{2cm}}$

*Multiplication of  $TO \times O$  using a formal multiplication method.*

- a) Has completed the calculation without awareness of place value - i.e. has totalled the result of  $7 \times 3$  and  $6 \times 3$ .
- b) Has not exchanged 20 ones for 2 tens, or has forgotten to add the exchanged tens to the tens column.
- c) Has made an arithmetic error in the calculation - review the written method to identify the precise misconception.
- d) Correct answer.

**13.  $24 \div 3 =$  \_\_\_\_\_**

***Division within known times tables facts.***

- a) Correct answer.
- b) Believes that  $3 \times 9 = 24$  indicating a lack of familiarity with the expected known multiplication facts.
- c) Believes that  $3 \times 6 = 24$  indicating a lack of familiarity with the expected known multiplication facts.
- d) Does not understand that  $11 \times$  a given number will be greater than  $10 \times$  a given number (in this case, 90).

**14.  $92 \div 4 =$  \_\_\_\_\_**

***Division using informal methods - no remainders.***

- a) Has made an arithmetic error when dividing.
- b) Has attempted to divide by 4 though repeated halving, but has only halved once.
- c) Has made an arithmetic error when dividing.
- d) Correct answer.

**15.  $99 \div 8 =$  \_\_\_\_\_**

***Division using informal method - with remainders.***

- a) Has rounded up rather than leave the

calculation with a remainder.

- b) Has ignored the remainder.
- c) Does not realise that the remainder cannot be larger than the divisor.
- d) Correct answer.

**16. To knit a scarf for his toy mouse, Kian, who is 5, needs 18 cm of wool. To knit a scarf for his toy penguin, he will need 4 times as much wool. How much wool will Kian need for his penguin's scarf?**

***Scaling problems.***

- a) Has attempted to  $\times 4$  by repeated doubling but has only doubled once.
- b) Correct answer.
- c) Has interpreted the question as  $5 \times 18$  rather than  $4 \times 18$ .
- d) Has attempted to  $\times 4$  by repeated doubling, but has made an error when doubling 36 cm, or believes  $18 \times 2$  is 31.

**17. Leo is going on holiday with his 2 friends. He packs 6 sets of tops, and 4 sets of bottoms. Assuming he keeps them all clean, how many different outfits can he make?**

***Correspondence problems.***

- a) Has used addition rather than multiplication to calculate.
- b) Has used subtraction rather than multiplication to calculate.
- c) Correct answer.
- d) Has multiplied 6 by 2 rather than by 4.

**18. The Year 3s in Oak Class have 4 lessons each day, which are each 70 minutes long. How many minutes do Oak Class spend in lessons each day?**

***Multiplication worded problems.***

- a) Has misinterpreted the questions as  $3 \times 70$  rather than  $4 \times 70$ .
  - b) Has made a calculation error, and only multiplied 70 by 2 when attempting repeated doubling.
  - c) Correct answer.
  - d) Has made at least one arithmetic error in the calculation - review any evidence of working to try and identify specific misconception or error.
- 

**19. Children's vests are packaged in packs of 4. The factory has made 44 vests today. How many packets can they make?**

*Division worded problems- no remainder.*

- a) Has interpreted the question as a multiplication question rather than division.
  - b) Has made a calculation error when dividing.
  - c) Correct answer
  - d) Has made a calculation error when dividing.
- 

**20. Pencils are sold in packs of 8. There are 35 children in Class 3. How many packs of pencils does the school need to buy so each child in Class 3 can have a pencil each?**

*Division worded problems, within known multiplication facts, including interpretation of the remainder for the context.*

- a) Has made an error in division or in dealing with the remainder.
  - b) Has given answer as a remainder, which is not appropriate for the context.
  - c) Has completed  $35 \div 8$  but has rounded down rather than up, which is inappropriate for the context.
  - d) Correct answer.
-

---

---

---