Contents

Additional Resources:

1 Interesting division

1 1-minute Revision

Concept Review

5 ÷ 10 = 0.5
5 ÷ 100 = 0.05
5 ÷ 1000 = 0.005

Dividing a number **by 10** is equivalent to **moving** the decimal point of the number **1 place to the left**.
Dividing a number **by 100** is equivalent to **moving** the decimal point of the number **2 places to the left**.
Dividing a number **by 1000** is equivalent to **moving** the decimal point of the number **3 places to the left**.

5 ÷ 0.1 = 50
5 ÷ 0.01 = 500
5 ÷ 0.001 = 5000

Dividing a number **by 0.1** is equivalent to **moving** the decimal point of the number **1 place to the right**.
Dividing a number **by 0.01** is equivalent to **moving** the decimal point of the number **2 places to the right**.
Dividing a number **by 0.001** is equivalent to **moving** the decimal point of the number **3 places to the right**.

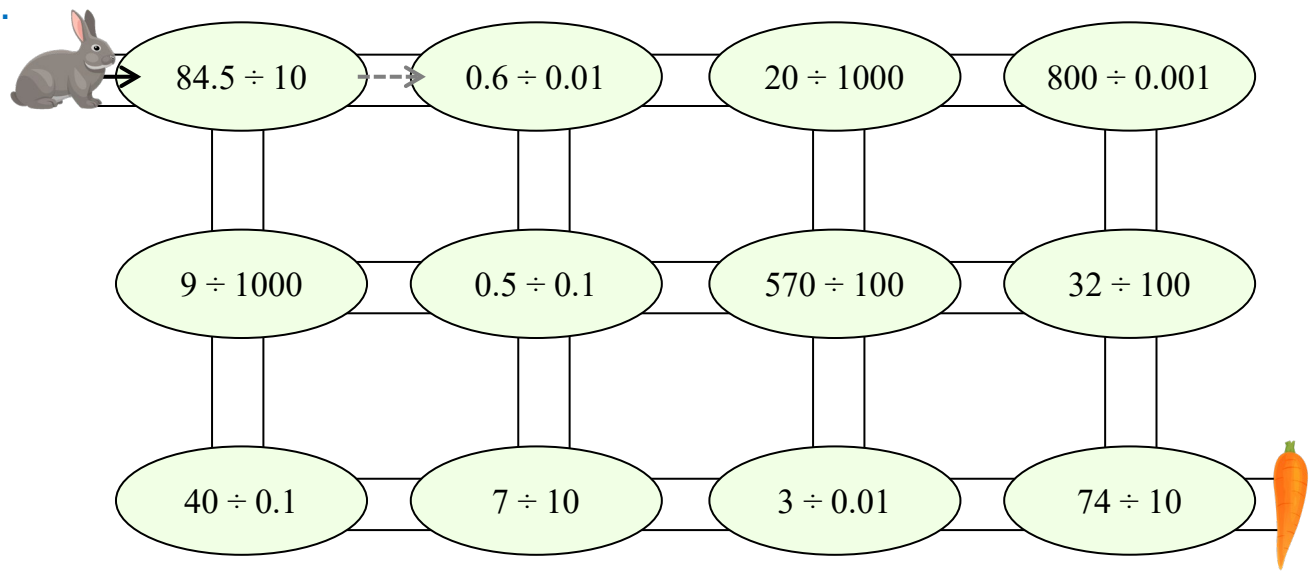
2 Basic Practice

Do the calculations.

1. 32.4 ÷ 10 = _____
2. 9 ÷ 100 = _____
3. 260 ÷ 1000 = _____
4. 0.7 ÷ 10 = _____
5. 0.06 ÷ 100 = _____
6. 4.6 ÷ 0.1 = _____
7. 24 ÷ 0.1 = _____
8. 130 ÷ 0.01 = _____
9. 0.68 ÷ 0.001 = _____
10. 0.076 ÷ 0.01 = _____

A rabbit is looking for food in the following maze. It passes through the stops with the result of the calculation larger than 1. Draw its route with arrows.

11.



Date		Time used	minutes	Marks	

3 Advanced Practice

Blacken the ◯ next to the correct answer.

Public Exam Question

12. Which of the following has the smallest result?

◯ A. 0.24 ÷ 0.1 ◯ B. 0.24 ÷ 10

◯ C. 2.4 ÷ 0.01 ◯ D. 240 ÷ 1000

Level-up Question

13. Which of the following has the result in two decimal places?

◯ A. 182 ÷ 100 ◯ B. 2.6 ÷ 100

◯ C. 46.3 ÷ 0.1 ◯ D. 34 ÷ 0.01

Circle the answers.

14. Which of the following has the same result as that of 3.5 ÷ 100?

350 ÷ 10 0.35 ÷ 10 35 ÷ 0.1

15. Which of the following has the result **different** from that of 7400 ÷ 10?

0.74 ÷ 1000 0.74 ÷ 0.001 7.4 ÷ 0.01

Level-up Question

16. Which of the following has a **different** result from the others?

18 ÷ 100 0.18 ÷ 10 180 ÷ 1000

1.8 ÷ 10 0.018 ÷ 0.1

Useful Tips

You can choose two expressions first to see whether their results are the same. If they are the same, look for an expression whose result is different from this result.

Level-up Question

17. Which two of the following have the same result?

39 ÷ 100 3.9 ÷ 0.1 390 ÷ 100

0.39 ÷ 10 0.039 ÷ 0.01

Assessment 1

Time allowed: 30 min

Name: _____ Class: _____( ) Date: _____

Assessment Points		Questions	Marks
Division of decimals	Division of decimals, mixed arithmetic operations of decimals	1–7	/32
Decimals and fractions	Interconversion between decimals and fractions, compare fractions	8–13	/23
Averages	Find the average of a group of data, solve problems involving averages	14–18	/22
Broken line graphs	Read and construct broken line graphs	19	/23
		Total marks:	/100

Instructions

- **Multiple choice questions:** Blacken the ◯ next to the correct answer.
- **Questions in which you are asked to 'show your working':** Write your mathematical expressions, answers, and statements / conclusions.
- **Other types of questions:** Answer as required in the spaces provided.

Marks

1. Do the calculations. 3M

a. 4.91 ÷ 0.01 = _____

b. 16.8 ÷ 8 = _____ 3M

c. 6 ÷ 1.2 = _____ 3M

d. 4.2 ÷ 0.23 ≈ _____ (rounded off to the nearest tenth) 3M

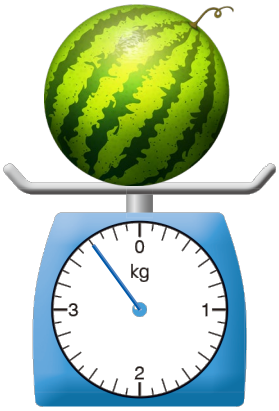
2. Which of the following has the result smaller than 1? 2M

◯ A. 460 ÷ 100 ◯ B. 0.07 ÷ 0.1

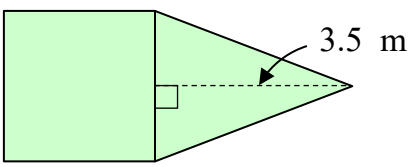
◯ C. 85 ÷ 10 ◯ D. 0.9 ÷ 0.01

3. The electricity consumption of Chan's family in May was 576 units. Their daily electricity consumption is _____ units on average. (Round off the answer to the nearest hundredth.) 2M

4. Divide the watermelon on the right into 8 equal slices. Each slice of watermelon weighs _____ kg. 2M



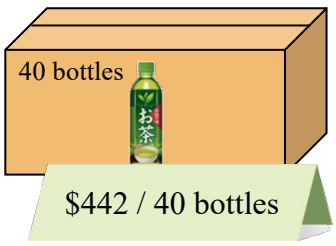
5. The figure on the right is made up of a square and a triangle. If the area of the triangle is 4.69 m^2, the side of the square is _____ m. 2M



Cross-topic Exercise

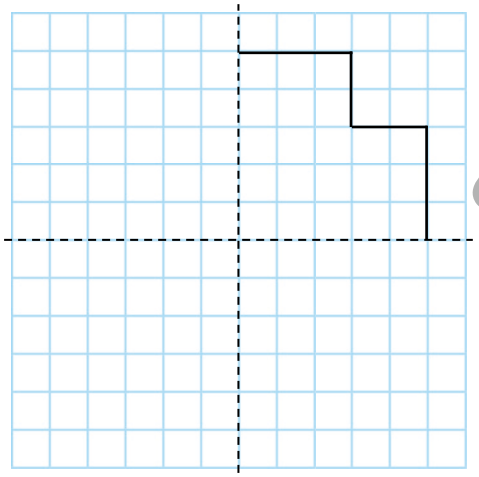
Complete the following.

1. The selling prices of the same green tea in 3 supermarkets are shown below.

Supermarket A	Supermarket B	Supermarket C
		

   a. According to the average selling price of each bottle of green tea from the lowest to the highest.
   Supermarket _____ < Supermarket _____ < Supermarket _____
   (lowest) (highest)

   b. Mum has to buy 29 bottles of green tea. At least she should pay $_____.

2. 

   a. The dotted lines are the axes of symmetry. Complete the above symmetrical shape.

   b. In the figure above, the side of each square is 1 cm. If the symmetrical shape is a net of a box without lid, the capacity of the box after folding the net is _____ mL.

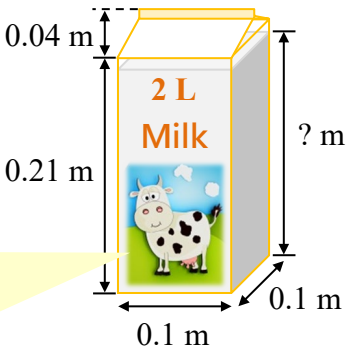
3. a. The height of the milk of the carton of milk on the right is _____ m.

   b. The height of the milk is _____ % of the whole carton of milk.

   c. Pour the milk into 0.2 L of cups equally. _____ cups can be filled up.

   d. In the carton of milk, _____% of the ingredients is minerals.

Ingredients	
Protein	0.03
Minerals	$\frac{7}{1000}$
Sugar	4.5%



   e. Among the 3 ingredients, the content of (protein / minerals / sugar) is the least. (Circle the answer)

Unit 1: Division of decimals and mixed operations (Exercises 1-4)

1. Dividing a number by 10, 100 and 1000

- Dividing a number by 1**0** is equivalent to moving the decimal point of the number **1 place** to the left. e.g.: 5 ÷ 10 = 0.5
- Dividing a number by 1**00** is equivalent to moving the decimal point of the number **2 places** to the left. E.g.: 5 ÷ 100 = 0.05
- Dividing a number by 1**000** is equivalent to moving the decimal point of the number **3 places** to the left. E.g.: 5 ÷ 1000 = 0.005

2. Dividing a number by 0.1, 0.01 and 0.001

- Dividing a number by **0.**1 is equivalent to moving the decimal point of the number **1 place** to the right. e.g.: 5 ÷ 0.1 = 50
- Dividing a number by **0.0**1 is equivalent to moving the decimal point of the number **2 places** to the right. e.g.: 5 ÷ 0.01 = 500
- Dividing a number by **0.00**1 is equivalent to moving the decimal point of the number **3 places** to the right. e.g.: 5 ÷ 0.001 = 5000

3. Division of decimals

e.g.①: 3 ÷ 2 = ?

2. Align the decimal point of the quotient with that of the dividend.

$$\begin{array}{r} 1.5 \\ 2\overline{)3.0} \\ 2 \\ \hline 10 \\ 10 \\ \hline \end{array}$$

1. Add a decimal point and 0; continue the division.

3 ÷ 2 = 1.5

e.g.②: 0.02 ÷ 0.3 = ? (rounded to the nearest hundredth)

0.02 ÷ 0.3
= 0.2 ÷ 3
= 0.066…
≈ 0.07

2. To round the answer to the nearest hundredth, calculate the quotient to the nearest thousandth.

$$\begin{array}{r} 0.066 \\ 3\overline{)0.20} \\ 18 \\ \hline 20 \\ 18 \\ \hline 2 \end{array}$$

1. When the divisor is a decimal, multiply both the dividend and the divisor by the same number so that the divisor changes to a whole number.

4. Solve problems of division of decimals involving remainders

e.g.: Cut 3.2 m of copper wire into segments of length 0.6 m. How many segments are formed? What is the length of the remaining copper wire?

3.2 ÷ 0.6
= 5…0.2

5 segments are formed. The length of the remaining copper wire is 0.2 m.

$$\begin{array}{r} 5 \\ 6\overline{)32} \\ 30 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 5 \\ 6.\overline{)3.2} \\ 30 \\ \hline 2 \end{array} \quad \rightarrow \quad \begin{array}{r} 5 \\ 0.6\overline{)3.2} \\ 30 \\ \hline 0.2 \end{array}$$

Restore the position of the decimal point of the dividend so to confirm the correct value of the remainder.

5. 12.66 **6.** 127

7. 7.2 **8.** 43.792

9. 2.07 **10.** 1.8

11. 4.87…, 4.9 **12.** 8.290…, 8.29

13. $(6.5 + 8.5) \times 4.1 \div 2$
$= 30.75$
The area of the trapezium is 30.75 cm^2.

14. $25.5 \times 1.1 - 25.5$
$= 2.55$
The difference in weight between the two sisters is 2.55 kg.

15. $(2.5 - 0.75) \div 0.5$
$= 3…0.25$
3 bottles can be filled up at most.
250 mL (i.e. 0.25 L) of milk is left.

Common mistake 1 : 2.5 L of milk is left ×
- Neglect to resume the number of decimal places of the remainder.

Common mistake 2: 0.25 L of milk is left ×
- Neglect that the question is asking about mL.

16. 1000
[$(175 \times 8) \div (1.75 \times 0.8)$
$= (175 \times 8) \div (175 \times 0.01 \times 8 \times 0.1) = 1 \div (0.01 \times 0.1)$
$= 1 \div 0.001 = 1000$]

17. 25.5
[3500 g = 3.5 kg;
Weight of 1 packet of carrots
= 8.6 – Weight of 2 packets of potatoes;
Cost of each kilogram of carrots: $40.8 \div (8.6 - 3.5 \times 2)$]

Common mistake: 8 ×
- Neglect that the electronic scale only shows the weight of 1 packet of potatoes.

18. 8
[$9.5 \times 6 \div 20 = 2.85$, it means that 2 stamps are given; 6 stamps can be given for the purchase of 6 cups of ice cream; 2 + 6 = 8.]

Common mistake: 2 ×
- Neglect that 'buy 1 cup get 1 more stamp' so forget to add another 6 stamps.

19. 810 [$(168 + 25.5 \times 4) \times 3$]

20. 49.1
[As less than 1 unit is also calculated as the charge of 1 unit, use 87 units in the calculation.
$50 \times 0.5 + (87 - 50) \times 0.65 = 49.05 \approx 49.1$ (rounded off to the nearest tenth)]

Common mistake: 56.16 ×
- Neglect that the charge is \$0.5 for 'every unit of the first 50 units' and other requirement of the question. Wrongly write the expression as 86.4×0.65 to calculate the answer.

5 Conversion between decimals and fractions

1. $\frac{3}{10}$, 0.3

2. $\frac{1}{2}$, 0.5

3. $\frac{5}{8}$, 0.625

Common mistake: $\frac{4}{7}$, 0.57 ×
- Neglect that each portion of a fraction must be equal.

4. $\frac{1}{4}$, 0.25

5. $\frac{4}{5}$

6. $2\frac{1}{2}$

7. $16\frac{7}{20}$

8. $9\frac{3}{50}$

9. $20\frac{1}{8}$

10. $35\frac{8}{25}$

11. 0.7

12. 5.75

13. 6.875

14. 16.325 [$\frac{13 \times 25}{40 \times 25} = \frac{325}{1000}$]

15. 4.1125 [$\frac{9 \times 125}{80 \times 125} = \frac{1125}{10000}$]

16. 72.3125 [$\frac{5 \times 125 \times 5}{8 \times 2 \times 125 \times 5} = \frac{3125}{10000}$]

17. 1.4 [$1 + 3 \div 7 = 1.42\ldots \approx 1.4$]

Common mistake: 0.4 ×
- Forget to add the whole number part after changing the fraction part to a decimal.

18. 7.82 [$7 + 9 \div 11 = 7.818\ldots \approx 7.82$]

19. 9.65 [$9 + 11 \div 17 = 9.647\ldots \approx 9.65$]

20. B, D

21. A, C

22. 0.3 [$0.1 + 0.2$]

23. 1.33 [$1.45 - 0.12$]

24. $\frac{1}{12}$ [$\frac{1}{4} \times \frac{1}{3}$]

6 Comparing decimals and fractions

1. >

2. >

[$1 + 4 \div 11 = 1.36\ldots$]

3. <

[$5 + 5 \div 9 = 5.5\ldots, 5 + \frac{3 \times 2}{5 \times 2} = 5.6$]

4. <

[$3 + 12 \div 19 = 3.6\cdots, 3 + 11 \div 15 = 3.7\ldots$]

5. >

[$6 + \frac{13 \times 5}{20 \times 5} = 6.65, 6 + 9 \div 14 = 6.64\ldots$]

6. <

[$\frac{17}{6} = 2\frac{5}{6}; \frac{5}{7} < \frac{5}{6}$, the larger the denominator of the fraction with the same numerator, the smaller the value.]

Common mistake: > ×
- Neglect that $\frac{17}{6}$ is an improper fraction. Mistakenly regard that its value is smaller than 1.

7. $\frac{2}{5}, 0.37, \frac{1}{3}$

[$1 \div 3 = 0.33\ldots, \frac{2 \times 2}{5 \times 2} = 0.4$]

8. $1\frac{18}{25}, 1\frac{7}{10}, 1\frac{6}{11}$

[$1.7, 1 + 6 \div 11 = 1.5\ldots, 1 + \frac{18 \times 4}{25 \times 4} = 1.72$]

9. $3\frac{4}{7}, 3\frac{7}{12}, \frac{18}{5}$

[$\frac{18}{5} = 3\frac{3}{5} = 3.6, 3 + 7 \div 12 = 3.58\ldots,$
$3 + 4 \div 7 = 3.57\ldots$]

10. $2\frac{13}{31}, 2\frac{17}{40}, \frac{5}{2}$

[$\frac{5}{2} = 2\frac{1}{2} = 2.5, 2 + 13 \div 31 = 2.41\ldots, 2 + \frac{17 \times 25}{40 \times 25} = 2.425$]

11. salt

[$9 \div 16 = 0.5\ldots$]

12. Ivan, Bob

[$1 + 3 \div 16 = 1.18\ldots, 1 + 1 \div 6 = 1.16\ldots$]

13. D

[$1 + 1 \div 11 = 1.09\ldots, \frac{19 \times 5}{20 \times 5} = 0.95$]

MCQ Explanation

Wrong choice	Reason
A	Mistakenly regard that the value of '$\frac{1}{11}$' is the smallest, so it is the nearest to 1 and do not change the fraction to a decimal for further comparison.
B	Mistakenly regard that the smallest number is the nearest to 1. Neglect that when the numbers are smaller than 1, the smaller the value, the larger the difference from 1. Thus, when comparing 0.93 and 0.95, 0.95 is nearer to 1.
C	Mistakenly regard that the number the nearest to 1 must be larger than 1.

14. B

[$\frac{7 \times 5}{20 \times 5} = 0.35, 6 \div 17 = 0.352\ldots$]

MCQ Explanation

Wrong choice	Reason
A, C, D	Do not know how to change the fractions to decimals by division to make the comparison.

15. C

[A: $\frac{13}{4} = 3\frac{1}{4} = 3.25$, that is not equal to 3.3
B: $\frac{16}{3} = 5\frac{1}{3} = 5.3\ldots$, that is not larger than 5.5
C: $6 + 7 \div 9 = 6.77\ldots, 6 + 10 \div 13 = 6.76\ldots$
D: $1 + \frac{7 \times 5}{20 \times 5} = 1.35, 1 + 8 \div 21 = 1.38\ldots$]