

Class : F. 1_____ () Name : _____

Carmel Pak U Secondary School

2020/21 Form 1 Bridging Course : Mathematics

Date : 18 August 2021 (Wednesday)

Time : 9 am – 12 pm

Period	Schedule
9 : 00 – 9 : 15	Roll call
9 : 15 – 10 : 00	1.1 Divisibility
10 : 00 – 10 : 15	Recess
10 : 15 – 11 : 00	1.4 Arithmetic operations of whole numbers 1.5 Fractions
11 : 00 – 11 : 15	Recess
11 : 15 – 12 : 00	1.6 Decimals

Chapter 1 Self-study materials

1A01 基礎數學 Basic Computation

Instructions :

1. Read the textbook 1A Chapter 1 : Section 1.1–1.6
2. Watch the following videos
3. Complete the Lesson Worksheets 1.1, 1.4, 1.5 and 1.6

URL : <https://www.youtube.com/playlist?list=PLiaDHxD83J6XUgdtmibNElfUTU-MPsHID>



Content

1.1 Divisibility	Video 1 –7
1.2 Prime Factorization	Video 8 –13
1.3 H.C.F. and L.C.M.	Video 14 –23
1.4 Arithmetic Operations of Whole Numbers	Video 24 –28
1.5 Fractions	Video 29 –37
1.6 Decimals	Video 38 –43
#Section 1.1 –1.6 Flipped Classroom	Video 44 –49

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Lesson Worksheets 1.1 (Basic)

Name: _____ ()

Class: _____ Date: _____

1.1 Divisibility

(Refer to Book 1A p. 1.3 – 1.10.)

A. Numbers

Useful Tips

- **Whole numbers**

E.g., 0, 1, 2, 3, 4, 5, 6, ...

- **Natural numbers**

E.g., 1, 2, 3, 4, 5, 6, ...

Note that 0 (zero) is not a natural number.

- **Even numbers**

Even numbers are whole numbers that are divisible by 2.

E.g., 0, 2, 4, 6, ...

- **Odd numbers**

Odd numbers are whole numbers that are not divisible by 2.

E.g., 1, 3, 5, ...

- **Fractions**

E.g., $\frac{1}{4}$, $\frac{15}{8}$, $2\frac{4}{5}$

- **Decimals**

E.g., 3.5, 0.29

- **Divisibility**

When a number (first number) is divided by another (second number) and no remainder is obtained, we say that the first number is **divisible** by the second number.

For example:

(a) $\because 85 \div 5 = 17$

◀ No remainder

$\therefore 85$ is divisible by 5 .

(b) $\because 87 \div 5 = 17 \dots 2$

◀ The remainder is 2.

$\therefore 87$ is not divisible by 5.

B. Divisibility Tests of 10, 5 and 2

Useful Tips

- Divisibility Test of 10

Check whether the last digit of a natural number is 0.

E.g., 70 ✓ 100 ✓ 130 ✓
 32 ✗ 257 ✗ 309 ✗

- Divisibility Test of 5

Check whether the last digit of a natural number is 0 or 5.

E.g., 15 ✓ 420 ✓ 500 ✓
 52 ✗ 408 ✗ 442 ✗

- Divisibility Test of 2

Check whether the last digit of a natural number is an even number.

E.g., 54 ✓ 718 ✓ 350 ✓
 41 ✗ 603 ✗ 725 ✗

◀ That is, check whether the last digit is 0, 2, 4, 6 or 8.

Self Check

11. Which of the following is divisible by 5?

A. 306
 B. 582
 C. 645
 D. 916

12. Which of the following is divisible by 10?

A. 1905
 B. 1999
 C. 2002
 D. 2020

13. Which of the following is divisible by 2?

A. 357
 B. 470
 C. 531
 D. 689

C. Divisibility Tests of 4 and 8

Useful Tips

- Divisibility Test of 4

Check whether the last two digits of a natural number form a number divisible by 4.

E.g., 408 ✓ 524 ✓ 872 ✓
 135 ✗ 322 ✗ 490 ✗



Goal

- Determine whether a number is divisible by 4.

Tips

Obviously, when the number is an odd number, it cannot be divisible by 4.

Self Check

Determine whether each of the following is true or false. (14 – 17)

14. 187 is divisible by 4. True / False

15. 200 is divisible by 4. True / False

16. 254 is divisible by 4. True / False

17. 392 is divisible by 4. True / False

18. Which of the following is divisible by 4?

- A. 447
- B. 578
- C. 650
- D. 772

19. $19\heartsuit6$ is a four-digit number which is divisible by 4.
 Is 8 a possible value of \heartsuit ? Yes / No

Tips

Is $\underline{86}$ divisible by 4?

20. $234\heartsuit$ is a four-digit number which is divisible by 4. Write down all possible value(s) of \heartsuit .

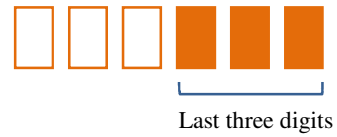
Tips

Note that the units digit (i.e., \heartsuit) must be an even number.
 Consider $40, 42, 44, 46, 48$. Which of them are divisible by 4?

Useful Tips

- Divisibility Test of 8

Check whether the last three digits of a natural number form a number divisible by 8.



E.g., 1016 ✓ 2240 ✓ 3128 ✓
 1046 ✗ 1881 ✗ 4228 ✗

Goal

- Determine whether a number is divisible by 8.

Tips

Obviously, when the number is an odd number, it cannot be divisible by 8.

Self Check

Determine whether each of the following is true or false. (21 – 24)

21. 2465 is divisible by 8. True / False

22. 2048 is divisible by 8. True / False

23. 3120 is divisible by 8. True / False

24. 2108 is divisible by 8. True / False

25. Which of the following is divisible by 8?

- A. 2680
- B. 3364
- C. 4886
- D. 8841

26. 4♥20 is a four-digit number which is divisible by 8.
 Is 5 a possible value of ♥? Yes / No

Tips

Is 520 divisible by 8?

27. 136♥ is a four-digit number which is divisible by 8. Write down all possible value(s) of ♥.

Tips

Note that the units digit (i.e., ♥) must be an even number.
 Consider 360, 362, 364, 366, 368.
 Which of them are divisible by 8?

D. Divisibility Tests of 3, 9 and 6

Useful Tips

- Divisibility Test of 3

Check whether the sum of all digits of a natural number is divisible by 3.

E.g., 84 ✓ ($\because 8 + 4 = 12$, which is divisible by 3)

94 ✗ ($\because 9 + 4 = 13$, which is not divisible by 3)

Goal

- Determine whether a number is divisible by 3.

Example 1.1T (Basic)

Determine whether each of the following numbers is divisible by 3.

(a) 113

(b) 207

Solution:

(a) $1 + 1 + 3 = 5$, which is not divisible by 3.

\therefore 113 is not divisible by 3.

(b) $2 + 0 + 7 = 9$, which is divisible by 3.

\therefore 207 is divisible by 3.



Instant Practice

Determine whether each of the following numbers is divisible by 3. (1 – 4)

1. 88

2. 171

3. 546

(Classwork 1.1(a))

4. 4091

(Classwork 1.1(b))

▶ Textbook Ex 1.1 #4

▶ Further Practice 1.1(Basic) #9 – 12

Useful Tips

- Divisibility Test of 9

Check whether the sum of all digits of a natural number is divisible by 9.

E.g., 288 ✓ ($\because 2 + 8 + 8 = 18$, which is divisible by 9)

246 ✗ ($\because 2 + 4 + 6 = 12$, which is not divisible by 9)

Goal

- Determine whether a number is divisible by 9.

Example 1.2T (Basic)

Determine whether each of the following numbers is divisible by 9.

(a) 154

(b) 306

Solution:

(a) $1 + 5 + 4 = 10$, which is not divisible by 9.

\therefore 154 is not divisible by 9.

(b) $3 + 0 + 6 = 9$, which is divisible by 9.

\therefore 306 is divisible by 9.



Instant Practice

Determine whether each of the following numbers is divisible by 9. (5 – 8)

5. 159

6. 684

7. 729

(Classwork 1.2(a))

8. 3897

(Classwork 1.2(b))

► Textbook Ex 1.1 #5

► Further Practice 1.1(Basic) #13 – 16

Useful Tips

- Divisibility Test of 6

Check whether a natural number is divisible by both 2 and 3.

Goal

- Determine whether a number is divisible by 6.

Example 1.3T (Basic)

Determine whether each of the following numbers is divisible by 6.

(a) 96

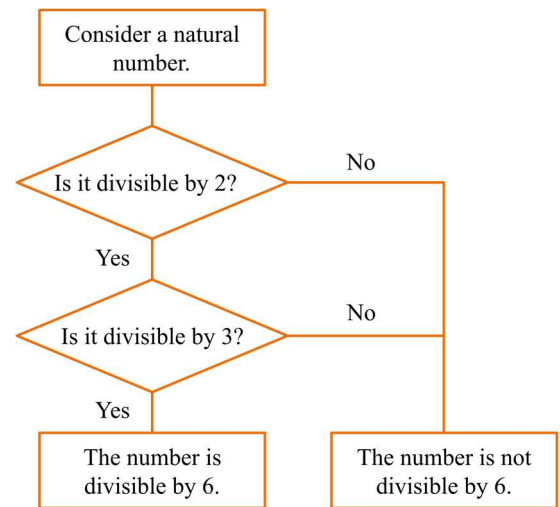
(b) 487



Solution:

(a) \because 96 is divisible by 2,
 and $9 + 6 = 15$, which is divisible by 3.
 \therefore 96 is divisible by 6.

(b) \because 487 is not divisible by 2.
 \therefore 487 is not divisible by 6.



Instant Practice

Determine whether each of the following numbers is divisible by 6. (9 – 12)

9. 86

10. 141

11. 186

(Classwork 1.3(a))

12. 2071

(Classwork 1.3(b))

- ▶ Textbook Ex 1.1 #6
- ▶ Further Practice 1.1(Basic) #17 – 20

Example 1.4T (Basic)

If $20\clubsuit$ is a three-digit number which is divisible by 6, find all the possible value(s) of \clubsuit .

Solution:

- $\therefore 20\clubsuit$ is divisible by 6.
- $\therefore 20\clubsuit$ must be divisible by 2.
- $\therefore \clubsuit$ could be 0, 2, 4, 6 or 8.

Moreover, $20\clubsuit$ must be divisible by 3.

- $\therefore 2 + 0 + \clubsuit = \clubsuit + 2$ must be divisible by 3.

\clubsuit	$\clubsuit + 2$
0	2
2	4
4	6
6	8
8	10

◀ 6 is divisible by 3.

- \therefore The possible value of \clubsuit is 4.



Instant Practice

13. If $36\heartsuit$ is a three-digit number which is divisible by 6, find all the possible value(s) of \heartsuit .

14. If $265\diamond$ is a four-digit number which is divisible by 6, find all the possible value(s) of \diamond .

(Classwork 1.4)

- ▶ Textbook Ex 1.1 #22 – 23
- ▶ Further Practice 1.1(Basic) #29 – 30

END

Lesson Worksheets 1.1 (Basic)

Answers

Self Check

11. C
12. D
13. B
14. False
15. True
16. False
17. True
18. D
19. No
20. 0, 4, 8
21. False
22. True
23. True
24. False
25. A
26. Yes
27. 0, 8

Instant Practice

1. No
2. Yes
3. Yes
4. No
5. No
6. Yes
7. Yes
8. Yes
9. No
10. No
11. Yes
12. No
13. 0, 6
14. 2, 8

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Lesson Worksheets 1.4 (Basic)

Name: _____ ()

Class: _____ Date: _____

1.4 Arithmetic Operations of Whole Numbers

(Refer to Book 1A p. 1.30 – 1.33.)

A. Four Basic Arithmetic Operations (+, −, ×, ÷)

Useful Tips

- Four basic arithmetic operations

Addition (+)	Example: $7 + 9$ Description: (a) 7 plus 9 (b) Add 9 to 7 Result: $\therefore 7 + 9 = 16$ \therefore The sum of 7 and 9 is 16.
Subtraction (−)	Example: $11 - 5$ Description: (a) 11 minus 5 (b) Subtract 5 from 11. Result: $\therefore 11 - 5 = 6$ \therefore When 5 is subtracted from 11, the difference is 6.
Multiplication (×)	Example: 4×6 Description: (a) 4 times 6 (b) Multiply 4 by 6. Result: $\therefore 4 \times 6 = 24$ \therefore The product of 4 and 6 is 24.
Division (÷)	Example: $25 \div 4$ Description: Divide 25 by 4. Result: $\therefore 25 \div 4 = 6 \dots 1$ \therefore When 25 is divided by 4, the quotient is 6 and the remainder is 1.

Goal

- Recognize the terms relating to the four arithmetic operations.

Self Check

1. Match the following descriptions with the correct expression.

<u>Description</u>	<u>Expression</u>
(a) Add 20 to 4. •	• (i) 20×4
(b) Multiply 20 by 4. •	• (ii) $4 \div 20$
(c) Divide 20 by 4. •	• (iii) $20 - 4$
(d) Subtract 4 from 20. •	• (iv) $20 \div 4$
	• (v) $4 + 20$
	• (vi) $4 - 20$

2. Which of the following represents 'subtract 5 from 10'?

- A. $5 + 10$ B. $5 - 10$ C. $10 - 5$ D. $10 \div 5$

3. Which of the following is the sum of 12 and 2?

- A. 6 B. 10 C. 14 D. 24

4. Which of the following is the product of 5 and 20?

- A. 4 B. 15 C. 25 D. 100

5. Which of the following is the quotient of dividing 24 by 6?

- A. $\frac{1}{4}$ B. 4 C. 30 D. 144

6. Write down the difference of subtracting 8 from 24. _____

7. Write down the product of 3 and 9. _____

Useful Tips

- Rules for performing mixed arithmetic operations

Rule 1: Perform multiplication and division before addition and subtraction from left to right.

Example 1.16T (Basic)

Calculate the following expressions.

(a) $176 - 49 + 64$

(b) $29 \times 3 + 52$



Solution:

(a) $176 - 49 + 64$
 $= 127 + 64$ ◀ Perform the operations from left to right.
 $= \underline{\underline{191}}$

(b) $29 \times 3 + 52$
 $= 87 + 52$ ◀ Perform multiplication first.
 $= \underline{\underline{139}}$

Instant Practice

1. Calculate $32 + 28 - 15$.

2. Calculate $48 \div 6 - 2$.

3. Calculate $18 + 12 \times 5$.

4. Calculate $24 - 12 \div 3$.

5. Calculate $629 + 338 \div 26$. (Classwork 1.16(a))

6. Calculate $774 - 13 \times 25$. (Classwork 1.16(b))

- Textbook Ex 1.4 #5 – 6
► Further Practice 1.4(Basic) #13 – 26

Goal

- Perform mixed arithmetic operations (interchange the orders of operations).

Example 1.17T (Basic)

Calculate the following expressions.

(a) $449 - 602 + 527$

(b) $18 \div 42 \times 7$

Solution:

$$\begin{aligned} \text{(a)} \quad & 449 - 602 + 527 \\ & = 449 + 527 - 602 \\ & = 976 - 602 \\ & = \underline{\underline{374}} \end{aligned}$$

◀ As $449 < 602$, we interchange the orders of $- 602$ and $+ 527$.

$$\begin{aligned} \text{(b)} \quad & 18 \div 42 \times 7 \\ & = 18 \times 7 \div 42 \\ & = 126 \div 42 \\ & = \underline{\underline{3}} \end{aligned}$$

◀ As the dividend (18) is smaller than the divisor (42), we interchange the orders of $\div 42$ and $\times 7$ for easier calculation.

**Instant Practice**

7. Calculate $28 - 48 + 22$.

8. Calculate $9 \div 36 \times 12$.

9. Calculate $64 - 24 \times 5 + 126$.

10. Calculate $1398 - 1463 + 642 \div 6$.

(Classwork 1.17(a))

11. Calculate $8 \times 6 \div 192 \times 8$.

12. Calculate $15 \div 24 \times 32 \div 5$.

(Classwork 1.17(b))

► Textbook Ex 1.4 #7 – 8, 11 – 12

► Further Practice 1.4(Basic) #27 – 30, 40 – 43

B. Brackets

Useful Tips

- Rules for performing mixed arithmetic operations

Rule 2: If there are brackets, perform the operations inside the brackets first by rule 1.

Goal

- Perform mixed arithmetic operations involving brackets.

Self Check

In each of the following expressions, circle the first operation when you calculate the expression. (14 – 19)

14. $4 + 6 \times 5$

15. $(4 + 6) \times 5$

16. $24 \div (6 - 3)$

17. $24 \div 6 - 3$

18. $(2 \times 3) + 4$

19. $2 \times 3 + 4$

Example 1.18T (Basic)

Calculate the following expressions.

(a) $27 - (18 - 7)$

(b) $5 \times (26 + 4)$

Solution:

(a) $27 - (18 - 7)$ ◀ Perform the operation inside the brackets first.
 $= 27 - 11$
 $= \underline{\underline{16}}$

(b) $5 \times (26 + 4)$ ◀ Perform the operation inside the brackets first.
 $= 5 \times 30$
 $= \underline{\underline{150}}$



Instant Practice

13. Calculate $(12 + 4) \times 5$.

14. Calculate $(24 - 6) \div 3$.

15. Calculate $36 \div (12 \div 3)$.

16. Calculate $42 - (11 - 4)$.

17. Calculate $245 - (135 + 42)$. (Classwork 1.18(a))

18. Calculate $(37 + 20) \div 19$. (Classwork 1.18(b))

▶ Textbook Ex 1.4 #9
▶ Further Practice 1.4(Basic) #31 – 36

Example 1.19T (Basic)

Calculate $(10 + 14) \times (20 - 16)$.

Solution:

$$(10 + 14) \times (20 - 16)$$

$$= 24 \times 4$$

$$= \underline{\underline{96}}$$

◀ Perform the operations inside the **brackets** first.

**Instant Practice**

19. Calculate $(50 - 12) - (4 + 6)$.

20. Calculate $(10 + 70) \div (35 - 19)$.

21. Calculate $(473 - 59) \div (7 + 16)$.

(Classwork 1.19)

► Textbook Ex 1.4 #14

► Further Practice 1.4(Basic) #46 – 49

Useful Tips

- Three kinds of brackets



Round brackets



Square brackets



Curly brackets

Goal

- Perform mixed arithmetic operations involving nested brackets.

Example 1.20T (Basic)

Calculate the following expressions.

(a) $18 + [(62 - 27) \times 6] \div 14$

(b) $65 \div \{80 - [2 \times (23 + 16) - 3]\}$

Solution:

(a) $18 + [(62 - 27) \times 6] \div 14$

$$= 18 + [35 \times 6] \div 14$$

$$= 18 + 210 \div 14$$

$$= 18 + 15$$

$$= \underline{\underline{33}}$$

◀ Perform the operation inside () first.

◀ Then perform the operation inside [].

(b) $65 \div \{80 - [2 \times (23 + 16) - 3]\}$

$$= 65 \div \{80 - [2 \times 39 - 3]\}$$

$$= 65 \div \{80 - [78 - 3]\}$$

$$= 65 \div \{80 - 75\}$$

$$= 65 \div 5$$

$$= \underline{\underline{13}}$$

◀ Perform the operation inside () first.

◀ Then perform the operations inside [].

◀ Finally, perform the operation inside { }.

**Instant Practice**

22. Calculate $56 - 4 \times [40 \div (8 - 3)]$.

23. Calculate $[156 - (37 + 15)] \times 6 \div 13$.

(Classwork 1.20(a))

24. Calculate $144 \div \{[7 + 5 \times (12 - 7)] \div 8\}$.

25. Calculate $\{66 - [(95 + 49) \div 36 + 17]\} \times 12$.

(Classwork 1.20(b))

► Textbook Ex 1.4 #15 – 16 ► Further Practice 1.4(Basic) #50 – 57

END

Lesson Worksheets 1.4 (Basic)

Answers

Self Check

1. (a) (v), (b) (i), (c) (iv), (d) (iii)
2. C
3. C
4. D
5. B
6. 16
7. 27
14. 6×5
15. $4 + 6$
16. $6 - 3$
17. $24 \div 6$
18. 2×3
19. 2×3

Instant Practice

1. 45
2. 6
3. 78
4. 20
5. 642
6. 449
7. 2
8. 3
9. 70
10. 42
11. 2
12. 4
13. 80
14. 6
15. 9
16. 35
17. 68
18. 3
19. 28
20. 5
21. 18
22. 24
23. 48
24. 36
25. 540

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Lesson Worksheets 1.5 (Basic)

Name: _____ ()

Class: _____ Date: _____

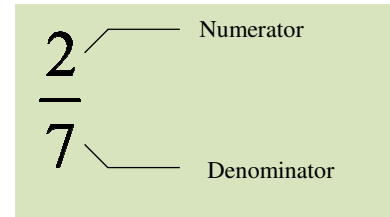
1.5 Fractions

(Refer to Book 1A p. 1.36 – 1.43.)

A. Concept of Fraction

Useful Tips

- In $\frac{1}{8}$, 1 is the **numerator** and 8 is the **denominator**.



- Proper fraction**

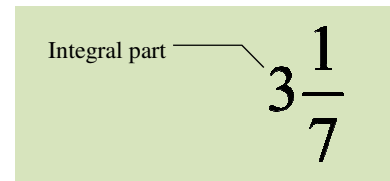
The numerator is less than the denominator, such as $\frac{2}{7}$.

- Improper fraction**

The numerator is larger than or equal to the denominator, such as $\frac{22}{7}$.

- Mixed number (or mixed fraction)**

It is the sum of a proper fraction and a natural number, such as $3\frac{1}{7}$.



Goal

- Recognize the terms relating to fractions.

Self Check

Determine whether each of the following is true or false. (1 – 3)

1. In $\frac{7}{4}$, 7 is the numerator. True / False

2. $\frac{97}{99}$ is an improper fraction. True / False

3. $16\frac{1}{3}$ is equal to $16 \times \frac{1}{3}$. True / False

Goal

- Perform the interconversion of improper fraction and mixed number.

Quick Drill 1

- (a) Convert $\frac{64}{11}$ into a mixed number.
- (b) Convert $4\frac{5}{13}$ into an improper fraction.

Solution:

(a) $\frac{64}{11} = 5\frac{9}{11}$ Denominator \longrightarrow $11 \overline{)64}$ $\xleftarrow{\hspace{1.5cm}}$ Integral part

$\underline{\underline{55}}$ $\xleftarrow{\hspace{1.5cm}}$ Numerator

$\underline{\underline{9}}$

(b) $4\frac{5}{13} = \frac{4 \times 13 + 5}{13} = \frac{57}{13}$

Instant Practice

1. Convert $\frac{4}{3}$ into a mixed number.

2. Convert $\frac{12}{5}$ into a mixed number.

3. Convert $\frac{7}{2}$ into a mixed number.

(Test Yourself 1(a)(i))

4. Convert $\frac{47}{12}$ into a mixed number.

(Test Yourself 1(a)(ii))

5. Convert $\frac{98}{15}$ into a mixed number.

(Test Yourself 1(a)(iii))

6. Convert $1\frac{1}{5}$ into an improper fraction.

7. Convert $4\frac{2}{3}$ into an improper fraction.

8. Convert $1\frac{3}{7}$ into an improper fraction.

(Test Yourself 1(b)(i))

9. Convert $7\frac{6}{11}$ into an improper fraction.

(Test Yourself 1(b)(ii))

10. Convert $9\frac{11}{14}$ into an improper fraction.

(Test Yourself 1(b)(iii))

► Textbook Ex 1.5 #2 – 3

► Further Practice 1.5(Basic) #3 – 6

B. Equivalent Fractions

Useful Tips

- Expansion of a fraction

For example, $\frac{1}{3} = \frac{1 \times 2}{3 \times 2} = \frac{2}{6}$

- Reduction of a fraction

For example, $\frac{4}{12} = \frac{4 \div 2}{12 \div 2} = \frac{2}{6}$ ◀ $\frac{2}{6}$ is not in its lowest terms.

$\frac{4}{12} = \frac{4 \div 4}{12 \div 4} = \frac{1}{3}$ ◀ $\frac{1}{3}$ is in its lowest terms.

When a fraction cannot be reduced further, it is in its lowest terms (or simplest form).

Goal

- Perform the expansion or reduction of fractions.

Quick Drill 2

- (a) If $\frac{3}{4} = \frac{\Delta}{28}$, find the value of Δ .
- (b) Simplify $\frac{30}{36}$ to lowest terms.

Solution:

- (a) Note that $28 = 4 \times 7$. ◀ Consider the denominator.
 $\therefore \Delta = 3 \times 7 = \underline{\underline{21}}$

- (b) The H.C.F. of 30 and 36 is 6. ◀ Find the H.C.F. of the numerator and the denominator.
 $\therefore \frac{30}{36} = \frac{30 \div 6}{36 \div 6} = \frac{5}{\underline{\underline{6}}}$ ◀ Divide the numerator and the denominator by the H.C.F.

$$\begin{array}{r|l} 2 & 30 \quad 36 \\ 3 & 15 \quad 18 \\ & 5 \quad 6 \end{array}$$

Instant Practice

11. If $\frac{1}{6} = \frac{\Delta}{24}$, find the value of Δ .

12. If $\frac{5}{7} = \frac{\Delta}{63}$, find the value of Δ .

(Test Yourself 2(a)(i))

13. If $\frac{1}{8} = \frac{4}{\Delta}$, find the value of Δ .

14. If $\frac{4}{15} = \frac{48}{\Delta}$, find the value of Δ .

(Test Yourself 2(a)(ii))

15. Simplify $\frac{7}{42}$ to lowest terms.

16. Simplify $\frac{27}{45}$ to lowest terms.

(Test Yourself 2(b)(i))

17. Simplify $\frac{40}{72}$ to lowest terms.

(Test Yourself 2(b)(ii))

► Textbook Ex 1.5 #4 – 5

► Further Practice 1.5(Basic) #7 – 10

Goal
 Compare fractions.
Example 1.21T (Basic)

(a) Expand $\frac{2}{3}$ and $\frac{4}{7}$ to fractions with a common denominator.

(b) Consider $\frac{2}{3}$ and $\frac{4}{7}$. Which fraction is larger?

**Solution:**

(a) Convert the fractions into the same denominator first.

∴ The L.C.M. of 3 and 7 is _____.

∴ The least common denominator is _____.

$$\frac{2}{3} = \frac{2 \times 7}{3 \times 7} = \frac{14}{\underline{\underline{21}}}$$

$$\frac{4}{7} = \frac{4 \times 3}{7 \times 3} = \frac{12}{\underline{\underline{21}}}$$

$$\begin{aligned} \text{(b)} \quad & \because \frac{14}{21} > \frac{12}{21} \\ & \therefore \frac{2}{3} \text{ is larger.} \end{aligned}$$

Tips

'<' means 'is smaller than'.

'>' means 'is larger than'.

Instant Practice

18. (a) Expand $\frac{5}{8}$ and $\frac{7}{10}$ to fractions with a common denominator.

(b) Consider $\frac{5}{8}$ and $\frac{7}{10}$. Which fraction is larger?

19. Consider $\frac{5}{12}$ and $\frac{13}{30}$. Which fraction is smaller?

20. (a) Expand $\frac{8}{15}$, $\frac{9}{20}$ and $\frac{11}{20}$ to fractions with a common denominator.

(b) Arrange $\frac{8}{15}$, $\frac{9}{20}$ and $\frac{11}{20}$ in ascending order using the symbol '<'.

21. Arrange $\frac{3}{4}$, $\frac{7}{18}$ and $\frac{13}{18}$ in descending order using the symbol '>'. (Classwork 1.21)

► Textbook Ex 1.5 #6 – 7

► Further Practice 1.5(Basic) #11 – 14

C. Addition and Subtraction of Fractions

Useful Tips

- When two fractions with the same denominator are added or subtracted, we just add or subtract the numerators to get the result. For example:

$$1. \quad \frac{3}{7} + \frac{2}{7} = \frac{3+2}{7} = \frac{5}{7}$$

$$2. \quad \frac{7}{9} - \frac{5}{9} = \frac{7-5}{9} = \frac{2}{9}$$

- When the denominators are different, we need to convert the fractions into the same denominator first. For example:

$$1. \quad 2 - \frac{4}{7} = \frac{14}{7} - \frac{4}{7} \quad \leftarrow 2 = \frac{2}{1} = \frac{14}{7}$$

$$= \frac{14-4}{7}$$

$$= \frac{10}{7} \quad (\text{or } 1\frac{3}{7})$$

$$2. \quad \frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} \quad \leftarrow \text{The L.C.M. of 2 and 3 is 6.}$$

$$= \frac{3+2}{6}$$

$$= \frac{5}{6}$$

Goal

- Perform addition or subtraction of fractions.

Tips

Remember to simplify the answer to lowest terms if necessary.

Self Check

4. Calculate $\frac{6}{7} - \frac{2}{7}$. _____

5. Calculate $\frac{8}{15} + \frac{2}{15}$. _____

6. Calculate $3 - \frac{5}{6}$. _____

7. Calculate $\frac{7}{10} + \frac{5}{12}$. _____

8. Calculate $\frac{35}{24} - \frac{9}{16}$. _____

Example 1.22T (Basic)

Calculate $\frac{3}{10} + \frac{1}{4} + \frac{3}{8}$.

Solution:

$$\begin{aligned} & \frac{3}{10} + \frac{1}{4} + \frac{3}{8} \\ &= \frac{12}{40} + \frac{10}{40} + \frac{15}{40} \\ &= \frac{12 + 10 + 15}{40} \\ &= \frac{37}{40} \end{aligned}$$

$$\begin{aligned} & \leftarrow \begin{array}{l} 10 = 2 \times 5 \\ 4 = 2^2 \\ 8 = 2^3 \end{array} \\ & \frac{\quad}{\therefore \text{L.C.M.} = 2^3 \times 5} \\ & \quad = 40 \end{aligned}$$



Instant Practice

22. Calculate $\frac{2}{3} + \frac{1}{8} + \frac{1}{12}$.

23. Calculate $\frac{19}{20} - \frac{1}{5} - \frac{3}{8}$.

24. Calculate $\frac{1}{4} + \frac{3}{10} - \frac{2}{5}$.

25. Calculate $\frac{6}{7} - \frac{5}{6} + \frac{9}{14}$.

(Classwork 1.22)

► Textbook Ex 1.5 #11
► Further Practice 1.5(Basic) #23 – 26

Example 1.23T (Basic)

Calculate $7\frac{1}{4} - 4\frac{7}{8}$.

Solution:

Method 1:



$$\begin{aligned}
 & 7\frac{1}{4} - 4\frac{7}{8} \\
 &= 7\frac{2}{8} - 4\frac{7}{8} \quad \blacktriangleleft \text{The L.C.M. of 4 and 8 is 8.} \\
 &= 6 + 1\frac{2}{8} - 4\frac{7}{8} \quad \blacktriangleleft \text{We cannot perform the subtraction as } \frac{2}{8} < \frac{7}{8}. \\
 &= 6 + \frac{10}{8} - 4\frac{7}{8} \quad \text{1 is borrowed from the integral part to } \frac{2}{8}. \\
 &= 6 - 4 + \frac{10 - 7}{8} \\
 &= \underline{\underline{2\frac{3}{8}}} \quad (\text{or } \frac{19}{8})
 \end{aligned}$$

Method 2 (convert to improper fractions):

$$\begin{aligned}
 & 7\frac{1}{4} - 4\frac{7}{8} \\
 &= \frac{29}{4} - \frac{39}{8} \\
 &= \frac{58}{8} - \frac{39}{8} \\
 &= \frac{58 - 39}{8} \\
 &= \underline{\underline{\frac{19}{8}}} \quad (\text{or } 2\frac{3}{8})
 \end{aligned}$$

Instant Practice

26. Calculate $2\frac{1}{6} - 1\frac{5}{12}$.

27. Calculate $4\frac{1}{10} - 2\frac{7}{16}$.

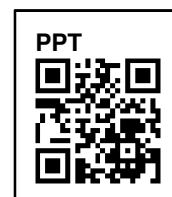
28. Calculate $4\frac{4}{7} - 2\frac{2}{3} - \frac{1}{7}$.

(Classwork 1.23)

- ▶ Textbook Ex 1.5 #13, 16
- ▶ Further Practice 1.5(Basic) #29, 30, 41, 42

Example 1.24T (Basic)

Calculate $\frac{1}{4} - \frac{5}{9} + \frac{3}{4}$.



Solution:

$$\begin{aligned} & \frac{1}{4} - \frac{5}{9} + \frac{3}{4} \\ &= \frac{9}{36} - \frac{20}{36} + \frac{27}{36} \\ &= \frac{9 - 20 + 27}{36} \\ &= \frac{9 + 27 - 20}{36} \\ &= \frac{16}{36} \\ &= \frac{4}{9} \end{aligned}$$

- ◀ The L.C.M. of 4 and 9 is 36.
- ◀ To carry out the subtraction, we need to interchange the neighbouring and .
- ◀ Simplify to lowest terms.

Instant Practice

29. Calculate $\frac{3}{8} - \frac{11}{12} + \frac{7}{8}$.

30. Calculate $\frac{3}{10} - \frac{7}{10} + \frac{8}{15}$.

31. Calculate $\frac{4}{15} - 1\frac{7}{10} + 2\frac{11}{15}$.

32. Calculate $4\frac{7}{12} - 5\frac{3}{4} + 3\frac{1}{4}$.

(Classwork 1.24)

► Textbook Ex 1.5 #16

► Further Practice 1.5(Basic) #43, 44

D. Multiplication of Fractions

Useful Tips

- Steps to multiply fractions
 - Step 1: Convert all mixed numbers into improper fractions.
 - Step 2: Cancel out all common factors in numerators and denominators.
 - Step 3: Multiply the numerators and denominators separately.

Goal

- Perform multiplication of fractions.

Example 1.25T (Basic)

Calculate the following expressions.

(a) $\frac{9}{5} \times \frac{25}{18}$

(b) $\frac{20}{3} \times 1\frac{13}{14}$



Solution:

$$\begin{aligned} \text{(a)} \quad & \frac{9}{5} \times \frac{25}{18} \\ & = \frac{\overset{1}{\cancel{9}}}{\underset{1}{\cancel{5}}} \times \frac{\overset{5}{\cancel{25}}}{\underset{2}{\cancel{18}}} \\ & = \frac{5}{2} \quad (\text{or } 2\frac{1}{2}) \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad & \frac{20}{3} \times 1\frac{13}{14} \\ & = \frac{\overset{10}{\cancel{20}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{9}{\cancel{27}}}{\underset{7}{\cancel{14}}} \\ & = \frac{90}{7} \quad (\text{or } 12\frac{6}{7}) \end{aligned}$$

Instant Practice

33. Calculate $\frac{4}{5} \times \frac{15}{16}$.

34. Calculate $\frac{5}{3} \times \frac{27}{20}$.

35. Calculate $2\frac{5}{8} \times \frac{4}{35}$.

36. Calculate $6\frac{7}{8} \times 7\frac{1}{5}$.

(Classwork 1.25)

► Textbook Ex 1.5 #14

► Further Practice 1.5(Basic) #31 – 34

E. Division of Fractions

Useful Tips

- Steps to divide fractions

Step 1: Convert all mixed numbers into improper fractions.

Step 2: Change division to multiplication.

$$\text{E.g., } \frac{5}{3} \div 4 = \frac{5}{3} \times \frac{1}{4}, \quad \frac{6}{5} \div \frac{8}{15} = \frac{6}{5} \times \frac{15}{8}$$

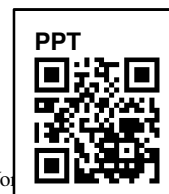
Step 3: Cancel out all common factors in numerators and denominators.

Step 4: Multiply the numerators and denominators separately.

Goal

- Perform division of fractions.

Example 1.26T (Basic)



Calculate the following expressions.

(a) $\frac{8}{7} \div \frac{4}{3}$

(b) $\frac{27}{4} \div 1\frac{5}{16}$

Solution:

$$\begin{aligned} \text{(a)} \quad \frac{8}{7} \div \frac{4}{3} &= \frac{\overset{2}{\cancel{8}}}{7} \times \frac{3}{\underset{4}{\cancel{4}_1}} \\ &= \frac{6}{7} \end{aligned}$$

◀ Change $\div \frac{4}{3}$ to $\times \frac{3}{4}$.

$$\begin{aligned} \text{(b)} \quad \frac{27}{4} \div 1\frac{5}{16} &= \frac{27}{4} \div \frac{21}{16} \\ &= \frac{\overset{9}{\cancel{27}}}{\underset{1}{\cancel{4}_1}} \times \frac{\overset{4}{\cancel{16}}}{\underset{7}{\cancel{21}_3}} \\ &= \frac{36}{7} \quad (\text{or } 5\frac{1}{7}) \end{aligned}$$

◀ Change $\div \frac{21}{16}$ to $\times \frac{16}{21}$.

Instant Practice

37. Calculate $\frac{25}{28} \div \frac{5}{4}$.

38. Calculate $\frac{9}{4} \div \frac{27}{20}$.

39. Calculate $3\frac{6}{7} \div \frac{9}{28}$.

40. Calculate $3\frac{3}{4} \div 4\frac{3}{8}$.

(Classwork 1.26)

► Textbook Ex 1.5 #15 ► Further Practice 1.5(Basic) #35 – 40

Example 1.27T (Basic)

Calculate the following expressions.

(a) $\frac{4}{3} \times \frac{25}{8} \div \frac{10}{9}$

(b) $\frac{35}{12} \div \frac{21}{8} \times 2\frac{2}{15}$



Solution:

(a) $\frac{4}{3} \times \frac{25}{8} \div \frac{10}{9}$

$$= \frac{\overset{1}{\cancel{4}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{5}{\cancel{25}}}{\underset{2}{\cancel{8}}} \times \frac{\overset{3}{\cancel{9}}}{\underset{2}{\cancel{10}}}$$

$$= \frac{15}{4} \quad (\text{or } 3\frac{3}{4})$$

(b) $\frac{35}{12} \div \frac{21}{8} \times 2\frac{2}{15}$

$$= \frac{\overset{1}{\cancel{35}}}{\underset{3}{\cancel{12}}} \times \frac{\overset{2}{\cancel{8}}}{\underset{3}{\cancel{21}}} \times \frac{\overset{2}{\cancel{32}}}{\underset{3}{\cancel{15}}}$$

$$= \frac{64}{27} \quad (\text{or } 2\frac{10}{27})$$

Instant Practice

41. Calculate $\frac{5}{6} \times \frac{2}{15} \div \frac{8}{9}$.

42. Calculate $6\frac{1}{4} \div \frac{3}{10} \times \frac{24}{5}$.

43. Calculate $\frac{8}{15} \div 2\frac{2}{5} \times 4\frac{2}{3}$.

44. Calculate $3\frac{1}{5} \times 2\frac{7}{10} \div \frac{8}{15}$.

(Classwork 1.27)

► Textbook Ex 1.5 #19

► Further Practice 1.5(Basic) #45, 46

F. Mixed Arithmetic Operations of Fractions

Useful Tips

- Rules for performing mixed arithmetic operations

Rule 1: Perform multiplication and division before addition and subtraction from left to right.

Rule 2: If there are brackets, perform the operations inside the brackets first by rule 1.

Goal

- Perform mixed arithmetic operations of fractions.

Example 1.28T (Basic)

Calculate the following expressions.

(a) $\frac{4}{3} + \frac{7}{2} \div 3$

(b) $\left(\frac{21}{2} - \frac{23}{4}\right) \times 1\frac{1}{5}$



Solution:

$$\begin{aligned}
 \text{(a)} \quad \frac{4}{3} + \frac{7}{2} \div 3 &= \frac{4}{3} + \frac{7}{2} \times \frac{1}{3} \\
 &= \frac{4}{3} + \frac{7}{6} \\
 &= \frac{8}{6} + \frac{7}{6} \\
 &= \frac{15}{6} \\
 &= \frac{5}{2} \quad (\text{or } 2\frac{1}{2})
 \end{aligned}$$

◀ **Rule 1:** Perform division before addition.

$$\begin{aligned}
 \text{(b)} \quad \left(\frac{21}{2} - \frac{23}{4}\right) \times 1\frac{1}{5} &= \left(\frac{42}{4} - \frac{23}{4}\right) \times 1\frac{1}{5} \\
 &= \frac{19}{4} \times \frac{6^3}{5} \\
 &= \frac{57}{10} \quad (\text{or } 5\frac{7}{10})
 \end{aligned}$$

◀ **Rule 2:** Perform operation inside the brackets first.

Instant Practice

45. Calculate $\frac{19}{5} - \frac{4}{3} \div \frac{8}{9}$.

46. Calculate $6\frac{3}{5} - 2\frac{7}{10} \times \frac{2}{3}$.

(Classwork 1.28(a))

47. Calculate $\left(\frac{3}{8} + \frac{7}{12}\right) \div 3\frac{5}{6}$.

48. Calculate $\left(\frac{1}{5} + \frac{7}{12}\right) \div \left(2 - \frac{1}{3}\right)$.

49. Calculate $\left(4\frac{5}{6} - 2\frac{3}{4}\right) \div \left(\frac{5}{8} + \frac{1}{4}\right)$.

(Classwork 1.28(b))

► Textbook Ex 1.5 #20, 23
► Further Practice 1.5(Basic) #47 – 52

END

Lesson Worksheets 1.5 (Basic)

Answers

Self Check

1. True
2. False
3. False
4. $\frac{4}{7}$
5. $\frac{2}{3}$
6. $\frac{13}{6}$ (or $2\frac{1}{6}$)
7. $\frac{67}{60}$ (or $1\frac{7}{60}$)
8. $\frac{43}{48}$

Instant Practice

1. $\frac{1}{3}$
2. $2\frac{2}{5}$
3. $3\frac{1}{2}$
4. $3\frac{11}{12}$
5. $6\frac{8}{15}$
6. $\frac{6}{5}$
7. $\frac{14}{3}$
8. $\frac{10}{7}$
9. $\frac{83}{11}$
10. $\frac{137}{14}$
11. 4
12. 45
13. 32
14. 180
15. $\frac{1}{6}$
16. $\frac{3}{5}$
17. $\frac{5}{9}$
18. (a) $\frac{5}{8} = \frac{25}{40}$, $\frac{7}{10} = \frac{28}{40}$
(b) $\frac{7}{10}$
19. $\frac{5}{12}$
20. (a) $\frac{8}{15} = \frac{32}{60}$, $\frac{9}{20} = \frac{27}{60}$, $\frac{11}{20} = \frac{33}{60}$
(b) $\frac{9}{20} < \frac{8}{15} < \frac{11}{20}$
21. $\frac{3}{4} > \frac{13}{18} > \frac{7}{18}$
22. $\frac{7}{8}$
23. $\frac{3}{8}$
24. $\frac{3}{20}$
25. $\frac{2}{3}$
26. $\frac{3}{4}$

27. $1\frac{53}{80}$ (or $\frac{133}{80}$)
28. $1\frac{16}{21}$ (or $\frac{37}{21}$)
29. $\frac{1}{3}$
30. $\frac{2}{15}$
31. $1\frac{3}{10}$ (or $\frac{13}{10}$)
32. $2\frac{1}{12}$ (or $\frac{25}{12}$)
33. $\frac{3}{4}$
34. $\frac{9}{4}$ (or $2\frac{1}{4}$)
35. $\frac{3}{10}$
36. $\frac{99}{2}$ (or $49\frac{1}{2}$)
37. $\frac{5}{7}$
38. $\frac{5}{3}$ (or $1\frac{2}{3}$)
39. 12
40. $\frac{6}{7}$
41. $\frac{1}{8}$
42. 100
43. $\frac{28}{27}$ (or $1\frac{1}{27}$)
44. $\frac{81}{5}$ (or $16\frac{1}{5}$)
45. $\frac{23}{10}$ (or $2\frac{3}{10}$)
46. $\frac{24}{5}$ (or $4\frac{4}{5}$)
47. $\frac{1}{4}$
48. $\frac{47}{100}$
49. $\frac{50}{21}$ (or $2\frac{8}{21}$)

BRAVO Teaching Kit
Lesson Worksheets 1.6 (Basic)

Name: _____ ()

Class: _____ Date: _____

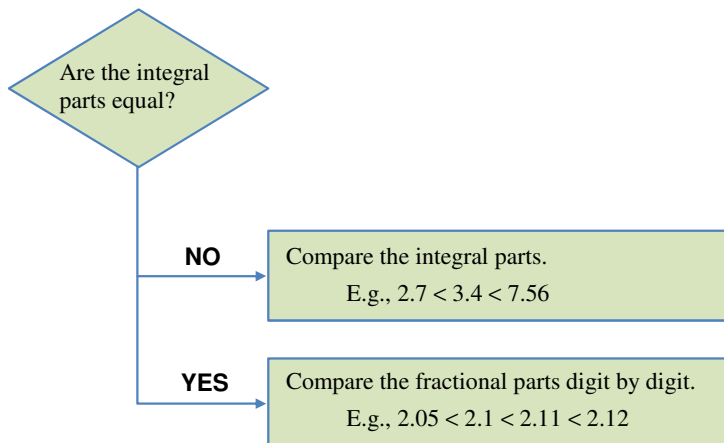
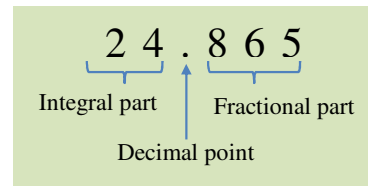
1.6 Decimals

(Refer to Book 1A p. 1.47 – 1.51.)

A. Concept of Decimal

Useful Tips

- **Decimal**
 A decimal consists of two parts, the integral part and the fractional part. They are separated by the **decimal point**.
- **Comparing decimals**



◀ Note that 2.1 = 2.10.

Goal

- Compare decimals.

Self Check

1. Arrange the following decimals in descending order using the symbol '>'.
 7.62, 9.17, 10.24 _____
2. Arrange the following decimals in descending order using the symbol '>'.
 6.3, 6.28, 6.33 _____
3. Arrange the following decimals in ascending order using the symbol '<'.
 5.4, 5.04, 5.42, 5.38 _____
4. Arrange the following decimals in ascending order using the symbol '<'.
 8.018, 8.118, 8.188, 8.081, 8.1 _____

Goal

- Perform the interconversion of fraction and decimal.

Quick Drill 3

- (a) Convert 3.24 into a fraction.
 (b) Convert $2\frac{3}{8}$ into a decimal.

Solution:

$$\begin{aligned} \text{(a)} \quad 3.24 &= 3\frac{24}{100} \\ &= 3\frac{6}{25} \end{aligned} \quad \blacktriangleleft \quad \text{Or } 3.24 = \frac{324}{100} = \frac{81}{25}$$

$$\begin{aligned} \text{(b)} \quad 2\frac{3}{8} &= 2 + \frac{3}{8} \\ &= 2 + 0.375 \\ &= \underline{\underline{2.375}} \end{aligned} \quad \blacktriangleleft \quad \begin{array}{r} 0.375 \\ 8 \overline{)3.000} \\ \underline{24} \\ 60 \\ \underline{56} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Instant Practice

1. Convert 0.6 into a fraction.

2. Convert 0.72 into a fraction.

3. Convert 2.8 into a fraction.

(Test Yourself 3(a)(i))

4. Convert 5.07 into a fraction.

(Test Yourself 3(a)(ii))

5. Convert 6.112 into a fraction. (Test Yourself 3(a)(iii))

6. Convert $\frac{2}{5}$ into a decimal.

7. Convert $\frac{7}{8}$ into a decimal.

8. Convert $1\frac{9}{10}$ into a decimal. (Test Yourself 3(b)(i))

9. Convert $3\frac{3}{5}$ into a decimal. (Test Yourself 3(b)(ii))

10. Convert $7\frac{4}{25}$ into a decimal. (Test Yourself 3(b)(iii))

► Textbook Ex 1.6 #3 – 4

► Further Practice 1.6(Basic) #3 – 6

B. Addition and Subtraction of Decimals

Goal

- Perform the addition or subtraction of decimals.

Example 1.29T (Basic)



Calculate the following expressions.

(a) $3.2 + 5.6$

(b) $6.7 - 3.1$

Solution:

(a) $3.2 + 5.6 = \underline{\underline{8.8}}$

◀ Align the decimal points:

$$\begin{array}{r} 3.2 \\ + 5.6 \\ \hline 8.8 \end{array}$$

(b) $6.7 - 3.1 = \underline{\underline{3.6}}$

◀ $\begin{array}{r} 6.7 \\ - 3.1 \\ \hline 3.6 \end{array}$

Instant Practice

11. Calculate $2.4 + 7.1$.

12. Calculate $5.8 - 3.7$.

13. Calculate $8.6 + 7.7$.

14. Calculate $5.4 - 2.9$.

(Classwork 1.29(a))

15. Calculate $8 - 3.7$.

16. Calculate $3.82 + 6.5$.

17. Calculate $6 + 5.6 - 7.41$.

(Classwork 1.29(b))

18. Calculate $5.9 - 1.83 + 4$.

► Textbook Ex 1.6 #5 – 6

► Further Practice 1.6(Basic) #8 – 15

C. Multiplication of Decimals

Goal

Perform multiplication of decimals.

Example 1.30T (Basic)

Calculate the following expressions.

(a) 1.8×3

(b) 5.2×1.7

Solution:

(a) $1.8 \times 3 = \underline{\underline{5.4}}$

Note:

• $1.8 \times 3 = \frac{18}{10} \times 3 = \frac{54}{10} = 5.4$

$$\begin{array}{r} \leftarrow 1.8 \\ \times 3 \\ \hline 5.4 \end{array}$$

(b) $5.2 \times 1.7 = \underline{\underline{8.84}}$

Note:

• $5.2 \times 1.7 = \frac{52}{10} \times \frac{17}{10} = \frac{884}{100} = 8.84$

$$\begin{array}{r} \leftarrow 5.2 \\ \times 1.7 \\ \hline 520 \\ 364 \\ \hline 8.84 \end{array}$$



Instant Practice**19.** Calculate 4.4×5 .

20. Calculate 8×3.6 .

21. Calculate 3.8×1.5 .

22. Calculate 2.9×5.7 .

23. Calculate 3.4×4.25 .

(Classwork 1.30(a))

24. Calculate 0.2×3.7 .

(Classwork 1.30(b))

► Textbook Ex 1.6 #9
► Further Practice 1.6(Basic) #20 – 23

D. Division of Decimals

Goal

- Perform division of decimals.

Example 1.31T (Basic)

Calculate the following expressions.

(a) $20.9 \div 11$

(b) $1.4 \div 3.5$

Solution:

(a) $20.9 \div 11$
 $= \underline{\underline{1.9}}$

$$\begin{array}{r} 1.9 \\ 11 \overline{)20.9} \\ \underline{11} \\ 99 \\ \underline{99} \\ 0 \end{array}$$

Case 1: The divisor is a natural number

We perform the division just like both dividend and divisor are natural numbers, and we put a decimal point directly above the decimal point of the dividend.

(b) $1.4 \div 3.5$

$= (1.4 \times 10) \div (3.5 \times 10)$
 $= 14 \div 35$
 $= \underline{\underline{0.4}}$

$$\begin{array}{r} 0.4 \\ 35 \overline{)14.0} \\ \underline{14} \\ 0 \end{array}$$

Case 2: The divisor is a decimal

We have to make the divisor become a natural number first.



Instant Practice

25. Calculate $6.48 \div 4$.

26. Calculate $74.1 \div 13$.

27. Calculate $68.85 \div 17$.

(Classwork 1.31(a))

28. Calculate $16.2 \div 1.8$.

29. Calculate $65 \div 2.6$.

30. Calculate $2.58 \div 4.3$.

(Classwork 1.31(b))

► Textbook Ex 1.6 #10

► Further Practice 1.6(Basic) #24 – 27

E. Mixed Arithmetic Operations

Useful Tips

- Rules for performing mixed arithmetic operations

Rule 1: Perform multiplication and division before addition and subtraction from left to right.

Rule 2: If there are brackets, perform the operations inside the brackets first by rule 1.

Goal

- Perform mixed arithmetic operations of decimals and fractions.

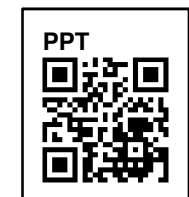
Example 1.32T (Basic)

Calculate the following expressions.

(a) $2.6 \times 7.1 + 3.9$ (b) $12\frac{5}{6} \div (5.2 - 3.8)$ (c) $\left(2\frac{3}{4} - 1.8\right) \times 6.2$

Solution:

(a) $2.6 \times 7.1 + 3.9 = 18.46 + 3.9$ ◀ **Rule 1:** Perform multiplication before addition.
 $\quad\quad\quad = \underline{\underline{22.36}}$



$$\begin{array}{r} 2.6 \\ \times 7.1 \\ \hline 1820 \\ \quad 26 \\ \hline 18.46 \end{array}$$

(b) $12\frac{5}{6} \div (5.2 - 3.8) = 12\frac{5}{6} \div 1.4$ ◀ **Rule 2:** Perform operation inside the brackets first.

$$\begin{aligned} &= \frac{77}{6} \div \frac{14}{10} \\ &= \frac{77}{6} \times \frac{10}{14} \\ &= \frac{55}{6} \quad (\text{or } 9\frac{1}{6}) \end{aligned}$$

Tips

Since $12\frac{5}{6} = 12.833\ 333\dots$, we cannot convert $12\frac{5}{6}$ into a decimal in finite number of decimal places.

(c) $\left(2\frac{3}{4} - 1.8\right) \times 6.2 = (2.75 - 1.8) \times 6.2$

$$\begin{array}{r} = 0.95 \times 6.2 \\ = \underline{5.89} \end{array} \quad \begin{array}{r} 0.95 \\ \times 6.2 \\ \hline 5700 \\ 190 \\ \hline 5.890 \end{array}$$

Tips

We can also convert 1.8 and 6.2 into fractions first:

$$\begin{aligned} \left(2\frac{3}{4} - 1.8\right) \times 6.2 &= \left(\frac{11}{4} - \frac{9}{5}\right) \times \frac{31}{5} \\ &= \left(\frac{55}{20} - \frac{36}{20}\right) \times \frac{31}{5} \\ &= \frac{19}{20} \times \frac{31}{5} \\ &= \frac{589}{100} \quad (\text{or } 5.89) \end{aligned}$$

Instant Practice

31. Calculate $19.2 + 5.3 \times 3.6$.

32. Calculate $24 - 49.4 \div 13$.

33. Calculate $13.01 - 3.29 \div 0.7$. (Classwork 1.32(a))

34. Calculate $6 \div (3.64 - 1.24)$.

35. Calculate $2.61 \times (0.24 + 9.78)$.

(Classwork 1.32(b))

36. Calculate $8.46 - 2\frac{1}{4} \div 1.5$.

37. Calculate $(8.2 - 3.6) \div 3\frac{9}{20}$.

38. Calculate $\left(9 - 3\frac{3}{8}\right) \times 2.4$.

39. Calculate $9.6 \times \left(3\frac{1}{3} + 2\frac{5}{6}\right)$.

40. Calculate $\left(5\frac{1}{4} - 3\frac{1}{2}\right) \times 2.2$.

(Classwork 1.32(c))

► Textbook Ex 1.6 #13 – 15
► Further Practice 1.6(Basic) #40 – 47

END

Lesson Worksheets 1.6 (Basic)

Answers

Self Check

1. $10.24 > 9.17 > 7.62$
2. $6.33 > 6.3 > 6.28$
3. $5.04 < 5.38 < 5.4 < 5.42$
4. $8.018 < 8.081 < 8.1 < 8.118 < 8.188$

Instant Practice

1. $\frac{3}{5}$
2. $\frac{18}{25}$
3. $2\frac{4}{5}$ (or $\frac{14}{5}$)
4. $5\frac{7}{100}$ (or $\frac{507}{100}$)
5. $6\frac{14}{125}$ (or $\frac{764}{125}$)
6. 0.4
7. 0.875
8. 1.9
9. 3.6
10. 7.16
11. 9.5
12. 2.1
13. 16.3
14. 2.5
15. 4.3
16. 10.32
17. 4.19
18. 8.07
19. 22
20. 28.8
21. 5.7
22. 16.53
23. 14.45
24. 0.74
25. 1.62
26. 5.7
27. 4.05
28. 9
29. 25
30. 0.6
31. 38.28
32. 20.2
33. 8.31
34. 2.5
35. 26.1522
36. 6.96 (or $\frac{174}{25}$)
37. $\frac{4}{3}$
38. 13.5 (or $\frac{27}{2}$)
39. 59.2 (or $\frac{296}{5}$)
40. 3.85 (or $\frac{77}{20}$)