Spark of Math

Teacher Book 3

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Spark of Math

BOOK 3

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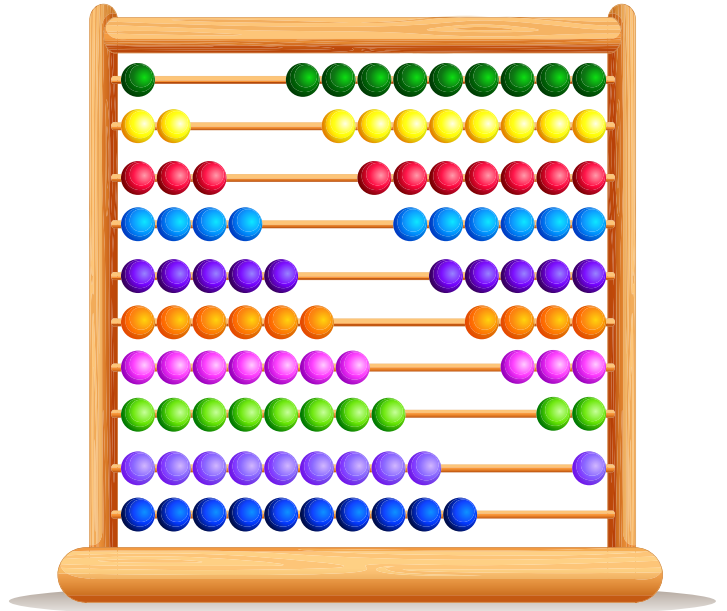
Contents

Working with 4-Digit Numbers

Vocabulary

- 4-digits
- Ones
- Tens
- Hundreds
- Thousands
- Expanded form
- Ascending
- Descending

Objectives

- Count with 4-digit numbers.
- Read and write 4-digit numbers.
- Analyze numbers up to 4-digits.
- Write numbers in words.
- Write 4-digit numbers using an expanded form.
- Arrange numbers in ascending and descending order.
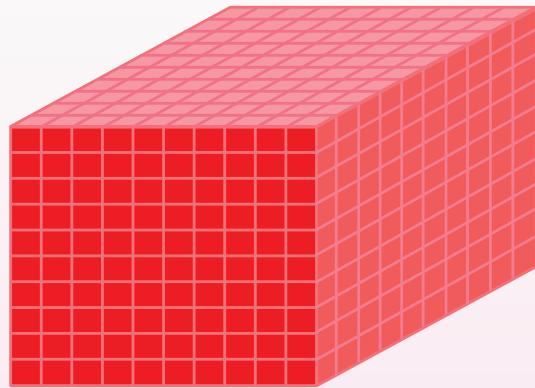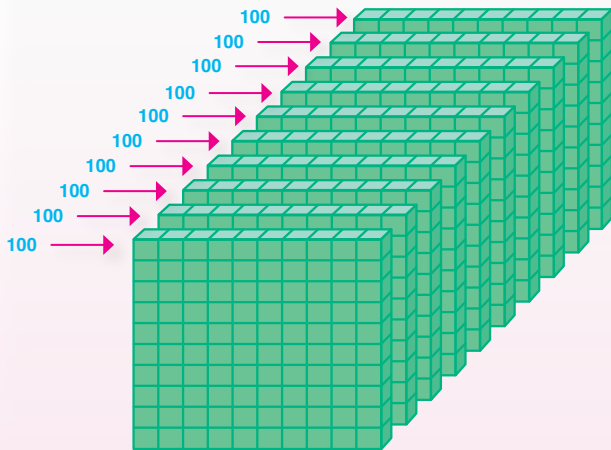
10 hundred **=** **1** thousand

We write a thousand as **1000** or **1,000**.

The comma, is used to separate the «1» of the three other digits, it just makes it easier to read.

thousands	hundreds	tens	ones
1	4	5	9

One thousand four hundred and fifty nine

thousands	hundreds	tens	ones
2	0	4	8

Two thousand and forty eight

Write the number.
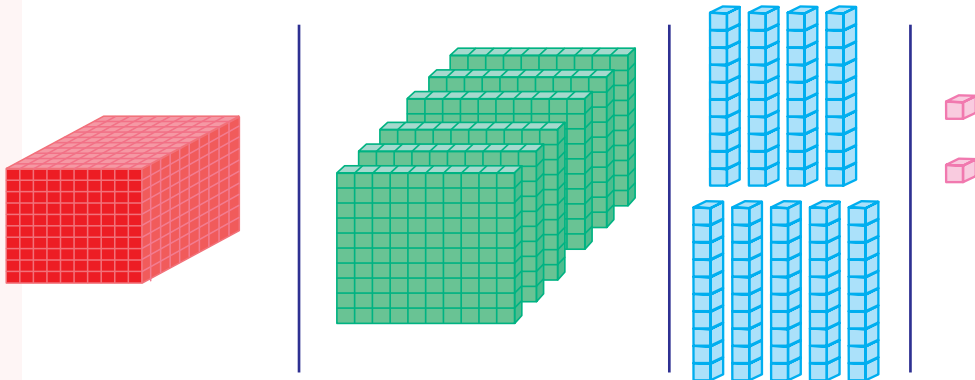
= 1,692
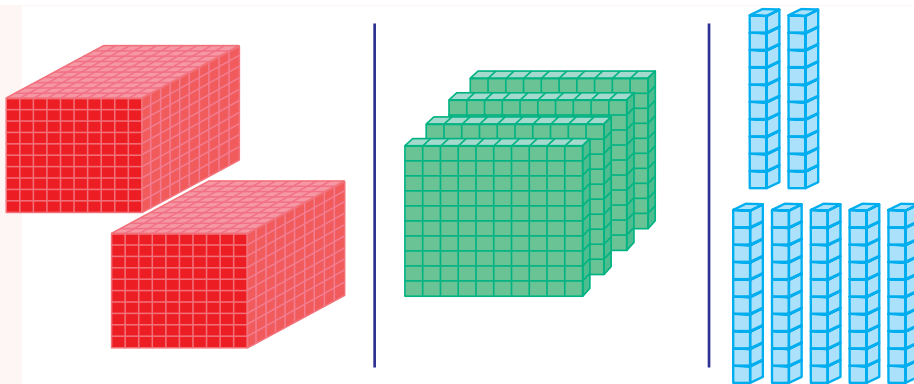
= 2,470
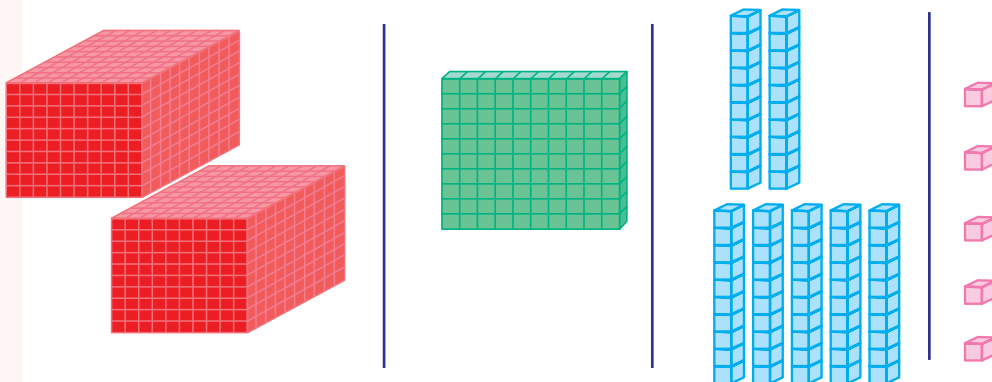
= 2,175

◉ **Count the beads in each abacus, and write the number.**

Th	H	T	O

3,245

Th	H	T	O

4,057

Th	H	T	O
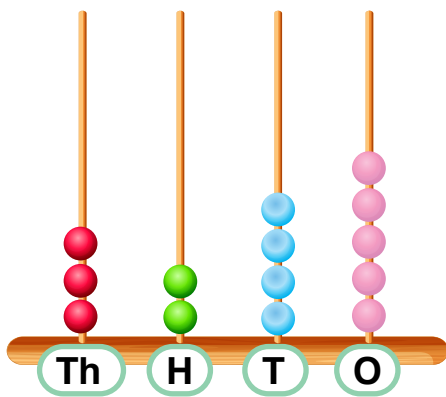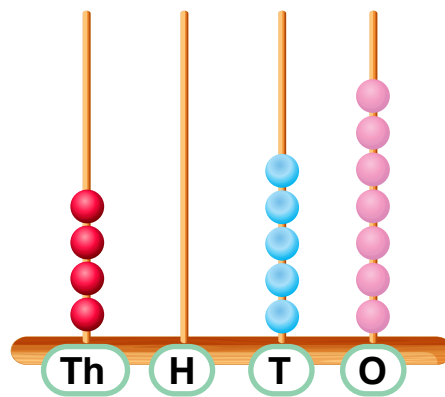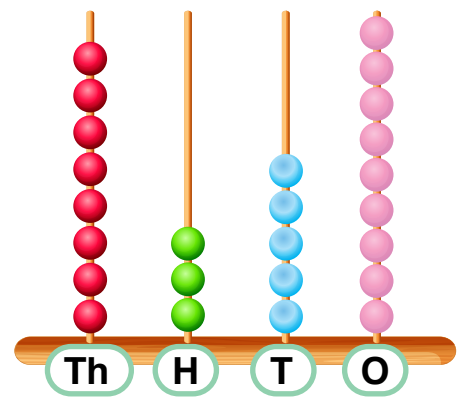
8,359

◉ **Write the number.**

A Two thousand three hundred and fourteen.

2,314

B Five thousand and sixty four.

5,064

C One thousand and twenty one.

1,021

D Three thousand and twelve.

3,012

Each digit in a number has a value.

The value of a digit depends on its place in the number.

thousands		hundreds	tens	ones
6	,	5	3	8

The expanded form of a number is written as a sum, showing the place values:

6000+500+30+8

◉ **Write in the correct place of the numbers.**

3,452 = **3** thousands **4** hundreds **5** tens **2** ones

2,731 = **2** thousands **7** hundreds **3** tens **1** ones

6,429 = **6** thousands **4** hundreds **2** tens **9** ones

8,740 = **8** thousands **7** hundreds **4** tens **0** ones

◉ **Write the value of the digit in the place named.**

5,421	731	649	8,502	1,204
Thousands	**Tens**	**Hundreds**	**Ones**	**Tens**
5,000	30	600	2	00

⊙ **Write each number in standard form.**

A   4,000 + 300 + 60 + 8   =   4,368

B   3,000 + 40 + 5   =   **3,045**

C   2,000 + 30 + 2   =   **2,032**

D   3,000 + 90   =   **3,090**

⊙ **Circle the expanded form of the number 6847.**

A   7,000 + 400 + 80 + 6

B   6,000 + 400 + 80 + 7

(C)   6,000 + 800 + 40 + 7

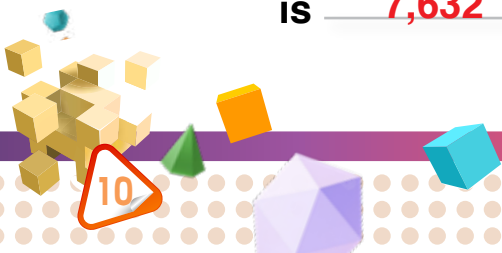**D**   6,000 + 800 + 70 + 4

Your Work

⊙ **Use the digits 2, 7, 6 and 3 to write the greatest possible number.**

○ The greatest digit ___7___ will be in the __thousands__ place.

○ The smallest digit ___2___ will be in the __ones__ place.

○ The greatest possible number using the digits 2, 7, 6 and 3 is ___7,632___

(1-2) Numbers in Words

A good way to help with reading large numbers is to break the numbers into smaller pieces.

$$4,687$$

We can break this number into 2 parts.
The first part is after the third digit from the right.
Then, start reading from left to right.
So we read the number as:

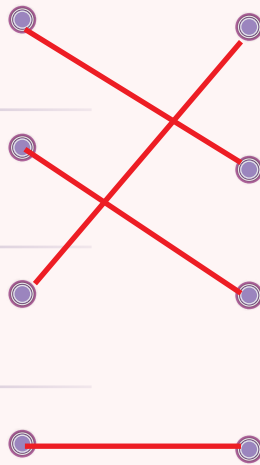**Four thousand six hundred and eighty seven**

Match.

1	Two thousand four hundred and thirty eight	9,017
2	Five thousand three hundred	2,438
3	Nine thousand and seventeen	5,300
4	Eight thousand six hundred and twenty	8,620

Write the numbers into words.

4,312   Four thousand three hundred and twelve

2,653   Two thousand six hundred and fifty one.

7,008   Seven thousand and eight.

(1-3) Comparing Numbers

To compare the numbers 2,340 and 2,670,
first, line up the digits of each number, then compare
starting from left.

thousands	hundreds	tens	ones
2	3	4	0
2	6	7	0

In this case the thousands digits are the same. Therefore,
look at the hundred place, since 3 hundred is less than 6
hundred, so 2,340 is less than 2,670.

2,340 < 2,670

⊙ **Put the correct sign in the box (> or < or =).**

4,200 **<** 4,300   1,900 **<** 1,524   5,555 **<** 9,550

2,670 **>** 8,500   3,211 **>** 4,609   7,320 **>** 7,310

2,543 **>** 2,244   8,705 **>** 8,700   3,000 **=** 3,000

Circle the smallest number.

A 4,000 \ 400 \ (4)

B (602) \ 620 \ 623

C 512 \ (215) \ 251

D 3,142 \ (1,328) \ 2,645

Arrange the following numbers in ascending order.

A

9,435	7,435	9,600	8,236
7,435	8,236	9,435	9,600

B

2,500	2,660	1,900	2,600
1,900	2,500	2,600	12,660

C

2,660	2,830	2,740	3,800	2,650
2,650	2,660	2,740	2,830	3,800

D

7,350	5,350	9,350	8,350	6,350
5,350	6,350	7,350	8,350	9,350

Arrange the following numbers in descending order.

A

7,772	8,500	6,550	5,690
8,500	7,772	6,550	5,690

B

3,900	1,346	4,930	1,727
4,930	3,900	1,727	1,346

C

8,420	5,640	9,760	3,909	7,650
9,760	8,420	7,650	5,640	3,909

D

5,505	2,350	9,464	6,678	6,654
9,464	6,678	6,654	5,505	2,350

Your Work

Taim has 9 bills of tens, and 3 bills of ones.   **93**

Ali has 7 bills of tens, and 13 bills of ones.   **83**

Sara has 8 bills of tens, and 3 bills of ones.   **83**

Which two have the same amount of money?

____**Ali**____ and ____**Sara**____ have the same amount of money.

(1-4) Problem Solving

This chart shows the vital statistics of some **Roosters Football Club** players.

Name	Height	Mass
• Zaid	206 cm	99 kg
• Ward	196 cm	110 kg
• Kareem	173 cm	78 kg
• Osama	184 cm	88 kg
• Rami	181 cm	79 kg
• Said	201 cm	118 kg

A. Who is the tallest? Who is the shortest?

Zaid is the tallest and Kareem is the shortest.

B. Put these players in order of lightest to heaviest:
Rami, Kareem and Osama.

Kareem, Rami and Osama.

C. Who do you want to throw the ball? Why?

Zaid because he is the tallest.

D. Who would you least like to have tackle you? Why?

Said because he is the heaviest.

◉ **Write the numbers.**

a   **Seven thousand four hundred and sixty eight:**

7,460

b   **Two thousand and seventeen:**

2,017

c   **Five thousand nine hundred and one:**

5,901

◉ **Write each number in standard form.**

1   3,000+200+8 =   2,208

2   4,000+500+7 =   4,507

3   7,000+9 =   7,009

4   5,000+800+10+5 =   5,815

◉ **Write the value of each underlined digit.**

1   6,300   6,000

2   9,340   300

3   7,590   0

4   2,485   80

⊙ **Write the correct sign in the box (>, < , =).**

1,525 **>** 1,255

1,120 **<** 2,121

5,002 **=** 5,002

9,919 **>** 4,491

2,011 **>** 2,010

4,006 **<** 4,060

⊙ **Arrange the following numbers.**

①	⑤	②	④	③
6,499	2,988	5,377	4,300	3,566

Descending order: ....

⑤	②	④	①	③
7,864	2,009	6,012	1,293	7,009

Ascending order: ....

Mathematical Operations

Vocabulary

- Addition
- Addend
- Subtraction
- Subtrahend
- Multiplication
- Factors
- Division

- Regrouping
- Sum
- Minuend
- Difference

- Product
- Divide

Objectives

- Add numbers up to 4-digits.
- Subtract numbers up to 4-digits.
- Multiply numbers up to 10×10.
- Divide 1 by 1 numbers.
- Solve problems in contexts.

Do you know how to add numbers? LET'S TRY!

Arrange the numbers according to their place value. Add the ones first, then the tens, next the hundreds and finally the thousands.

To add 7263 + 2415:

Add the ones	Add the tens	Add the hundreds	Add the thousands
7 2 6 ③	7 2 ⑥ 3	7 ② 6 3	⑦ 2 6 3
+ 2 4 1 ⑤	+ 2 4 ① 5	+ 2 ④ 1 5	+ ②4 1 5
⑧	⑦8	⑥ 7 8	⑨6 7 8

We call the numbers 7263, 2415 the addend, and the number 9678 the sum.

◉ Find the sum.

```
  1054
+ 7421
_____
  8475
```

```
  1010
+ 3864
_____
  4874
```

```
  2243
+ 2721
_____
  4964
```

```
  4702
+ 1253
_____
  5955
```

Addition with regrouping

```
  4 2 5 8          ⟶   Addend
+ 3 9 0 6          ⟶   Addend
_____
                   ⟶   Sum
```

Add the ones.

```
      1
    4 2 5 8              8
  + 3 9 0 6            + 6
  _____           _____
          4           1 4 = 1 0 + 4
```

Add the tens.

```
      1
    4 2 5 8
  + 3 9 0 6
  _____
        6 4
```

Add the hundreds.

```
    1
    4 2 5 8              2
  + 3 9 0 6            + 9
  _____           _____
      1 6 4           1 1 = 1 0 + 1
```

Add the thousands.

```
    1
    4 2 5 8
  + 3 9 0 6
  _____
    8 1 6 4
```

so ⟶

```
      4 2 5 8
    + 3 9 0 6
    _____
      8 1 6 4
```

◎ **Find the sum.**

$$\begin{array}{r} 7\,3\,2\,4 \\ +\ 2\,2\,7\,3 \\ \hline 9\,5\,9\,7 \end{array}$$

$$\begin{array}{r} 4\,2\,6\,6 \\ +\ 2\,1\,1\,0 \\ \hline 6\,3\,7\,6 \end{array}$$

$$\begin{array}{r} 6\,1\,1\,3 \\ +\ 2\,8\,9\,0 \\ \hline 9\,0\,0\,3 \end{array}$$

$$\begin{array}{r} 4\,6\,2\,2 \\ +\ 0\,3\,4\,8 \\ 4\,4\,0\,6 \\ \hline 9\,3\,7\,6 \end{array}$$

$$\begin{array}{r} 3\,5\,7\,1 \\ +\ 4\,2\,5\,0 \\ 1\,3\,7\,1 \\ \hline 9\,1\,9\,2 \end{array}$$

$$\begin{array}{r} 0\,4\,9\,9 \\ +\ \ \ 1\,5\,8\,4 \\ 4\,5\,7 \\ \hline 2\,5\,4\,0 \end{array}$$

◎ **Find the sum.**

A $6024+517=$

$$\begin{array}{r} \overset{1}{}\ \ \\ 6\,0\,2\,4 \\ +\ \ \ 5\,1\,7 \\ \hline 6\,5\,4\,1 \end{array}$$

> To find the horizontal addition arrange the numbers according to their place value, then add.

B $2324+2273=\underline{\ 4,597\ }$

C $4266+2110=\underline{\ 6,376\ }$

D $4622+2348=\underline{\ 6,970\ }$

◎ Addition Circles.

Wheel 1: 1,855 · 2,640 · 2,019 · 1,209 · 1,099 · 3,577 · 3,879 · 2,222

Wheel 2: 1,592 · 2,186 · 1,321 · 888 · 1,477 · 2,600 · 1,234 · 794
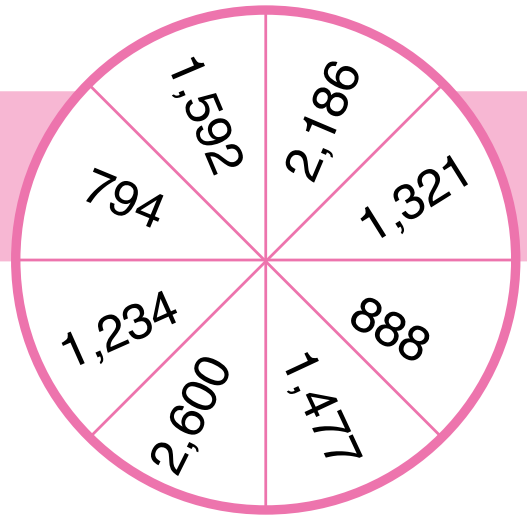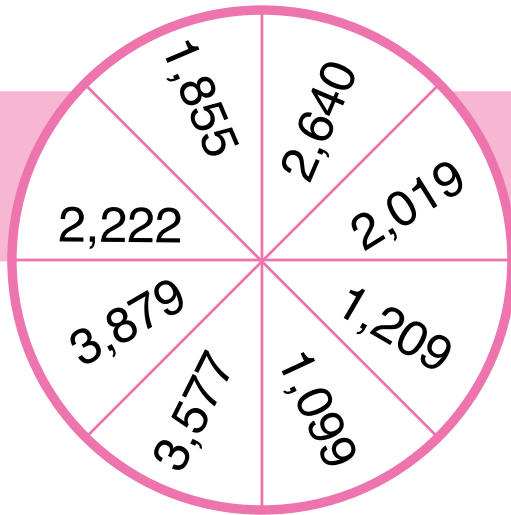
- Choose one number from each wheel.
- Add the numbers together.
- Do this three times with three different pairs of numbers.

A
$$
\begin{array}{r}
2,222 \\
+\,2,600 \\
\hline
4,822
\end{array}
$$

B
$$
\begin{array}{r}
3,577 \\
+\ 2,186 \\
\hline
5,763
\end{array}
$$

C
$$
\begin{array}{r}
1,855 \\
+\ \ \ \ 794 \\
\hline
2,649
\end{array}
$$

◎ Choose two numbers from (5237, 3046, 2960) which their addition sum is the greatest.

The numbers are __**5237**__ , __**3046**__ because

__**5237**__ + __**3046**__ = __**8,283**__
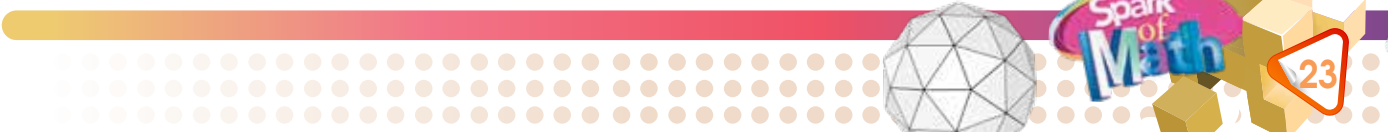
(2-2) Subtraction

To find

$$
\begin{array}{r}
5\ 8\ 9\ 6 \\
-\ 3\ 2\ 7\ 6 \\
\hline
\end{array}
$$

Subtract the ones:	Subtract the tens:	Subtract the hundreds:	Subtract the thousands:
5 8 9 **6** - 3 2 7 **6** **0**	5 8 **9** 6 - 3 2 **7** 6 **2 0**	5 **8** 9 6 - 3 **2** 7 6 **6 2 0**	**5** 8 9 6 - **3** 2 7 6 **2 6 2 0**

minuend
subtrahend
difference

◉ Subtract to find the difference.

A
$$
\begin{array}{r}
6,397 \\
-\ 3,227 \\
\hline
\textbf{3,170}
\end{array}
$$

B
$$
\begin{array}{r}
5,058 \\
-\ 3,047 \\
\hline
\textbf{2,011}
\end{array}
$$

C
$$
\begin{array}{r}
5,673 \\
-\ 3,422 \\
\hline
\textbf{2,251}
\end{array}
$$

D
$$
\begin{array}{r}
7,059 \\
-\ 3,038 \\
\hline
\textbf{4,021}
\end{array}
$$

◉ Subtract the following horizontal problems.

A $3,348 - 2,137 = 1,211$

$$
\begin{array}{r}
3,348 \\
-\quad 2,137 \\
\hline
1,211
\end{array}
$$

B $4,589 - 4,288 =$ _____ **301** _____

C $7,365 - 7,244 =$ _____ **121** _____

Subtracting with regrouping

| **Subtract the ones:** | $\begin{array}{r} 6\ 1\ 8\ \mathbf{2} \\ -\ \ 3\ 5\ 6\ \mathbf{7} \\ \hline \end{array}$ | Regroup "8 tens and 2 ones" as "7 tens and 12 ones" then subtract the ones. | $\begin{array}{r} ^{7}\ ^{12} \\ 6\ 1\ \cancel{8}\ \cancel{2} \\ -\ \ 3\ 5\ 6\ 7 \\ \hline 5 \end{array}$ |

| **Subtract the tens:** | $\begin{array}{r} ^{7}\ ^{12} \\ 6\ 1\ \cancel{8}\ \cancel{2} \\ -\ \ 3\ 5\ \mathbf{6}\ 7 \\ \hline \mathbf{1}\ 5 \end{array}$ |

| **Subtract the hundreds:** | $\begin{array}{r} ^{7}\ ^{12} \\ 6\ \mathbf{1}\ \cancel{8}\ \cancel{2} \\ -\ \ 3\ \mathbf{5}\ 6\ 7 \\ \hline 1\ 5 \end{array}$ | Regroup "6 thousand and 1 hundred" as "5 thousand and 11 hundred" then subtract the hundred. | $\begin{array}{r} ^{5}\ ^{11}\ ^{7}\ ^{12} \\ \cancel{6}\ \cancel{1}\ \cancel{8}\ \cancel{2} \\ -\ \ 3\ \mathbf{5}\ 6\ 7 \\ \hline \mathbf{6}\ 1\ 5 \end{array}$ |

| **Subtract the thousands:** | $\begin{array}{r} ^{5}\ ^{11}\ ^{7}\ ^{12} \\ \cancel{6}\ \cancel{1}\ \cancel{8}\ \cancel{2} \\ -\ \ \mathbf{3}\ 5\ 6\ 7 \\ \hline \mathbf{2}\ 6\ 1\ 5 \end{array}$ | $\longrightarrow$ | $\begin{array}{r} ^{5}\ ^{11}\ ^{7}\ ^{12} \\ \cancel{6}\ \cancel{1}\ \cancel{8}\ \cancel{2} \\ -\ \ 3\ 5\ 6\ 7 \\ \hline 2\ 6\ 1\ 5 \end{array}$ |

⊙ Find the difference.

$$\begin{array}{r} 4{,}764 \\ -\ \ 2{,}805 \\ \hline \mathbf{1{,}959} \end{array} \qquad \begin{array}{r} 9{,}377 \\ -\ \ 8{,}344 \\ \hline \mathbf{1{,}033} \end{array}$$

◉ Subtrac and show your work.

A 7,765 - 6,591 = 1,174

$$\begin{array}{r} 4,765 \\ -\ 6,591 \\ \hline 1,174 \end{array}$$

B 5,065 - 4,250 = <u>20,815</u>

C 9,342 - 7,212 = <u>69,130</u>

Your Work

7,978 - 5,244 = 2,734
7,594 - 4,860 = 2,734

- Write two numbers with the difference of 2,734.

- Write two numbers with the difference of an even number.

◉ Find the sum.

$$\begin{array}{r} 8,944 \\ -\ 7,253 \\ \hline 1,691 \end{array}$$

6,321 - 3,638 = 2,683
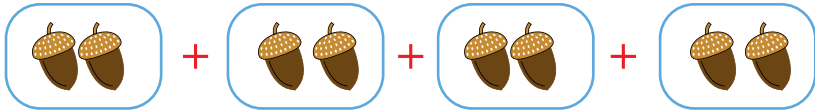
6,574 - 4,882 = 1,692

8,733 - 6,605 = 2,128

Multiplication means recurring addition.

🌰 + 🌰 + 🌰 + 🌰

2 + 2 + 2 + 2 = 8

or → $4 \times 2 = 8$

🌰🌰🌰 + 🌰🌰🌰 + 🌰🌰🌰 + 🌰🌰🌰 + 🌰🌰🌰

3 + 3 + 3 + 3 + 3 = 15

or → $5 \times 3 = 15$

$$\begin{array}{r} 1 \\ \times\, 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 2 \\ \times\, 4 \\ \hline 8 \end{array}$$
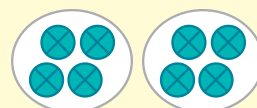
Add: $2 + 2 + 2 = 6$

Multiply: $3 \times 2 = 6$

Factors   Product

The numbers we multiply are called **factors**. The answer is called the **product.**

⊙ You can memorize the multiplication facts for any number by studying the multiplication tables.

$$6 \quad \longleftarrow \text{ find the 6 -row}$$
$$\times\ 7 \quad \longleftarrow \text{ find the 7 -column}$$
$$\overline{42} \quad \longleftarrow \text{ find the product}$$

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

⊙ Find the sum.

$$\begin{array}{r} 3 \\ \times\ 6 \\ \hline 18 \end{array} \qquad \begin{array}{r} 6 \\ +6 \\ 6 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 4 \\ \times\ 5 \\ \hline 20 \end{array} \qquad \begin{array}{r} 5 \\ +5 \\ 5 \\ 5 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 2 \\ \times\ 9 \\ \hline 18 \end{array} \qquad \begin{array}{r} 2 \\ 2 \\ 2 \\ 2 \\ +2 \\ 2 \\ 2 \\ 2 \\ 2 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 7 \\ \times\ 4 \\ \hline 28 \end{array} \qquad \begin{array}{r} 7 \\ +7 \\ 7 \\ 7 \\ \hline 28 \end{array}$$

Multiply.

$3 \times 5 =$ ___15___ $8 \times 4 =$ ___32___ $9 \times 7 =$ ___63___

$6 \times 2 =$ ___12___ $10 \times 2 =$ ___20___ $5 \times 1 =$ ___5___

$4 \times 4 =$ ___16___ $2 \times 8 =$ ___16___ $7 \times 3 =$ ___21___

$8 \times 7 =$ ___56___ $4 \times 5 =$ _____ $6 \times 9 =$ ___54___

$9 \times 9 =$ ___81___ $7 \times 8 =$ ___56___ $8 \times 5 =$ ___40___

$5 \times 7 =$ ___35___ $4 \times 9 =$ ___36___ $7 \times 2 =$ ___14___

◉ **Multiply and color.**

8 x 5 = 40

7x 5 = 35

5 x 1 = 5

5 x 2 = 10

9 x 5 = 45

5 x 4 = 20

6 x 5 = 30

5 x 5 = 25
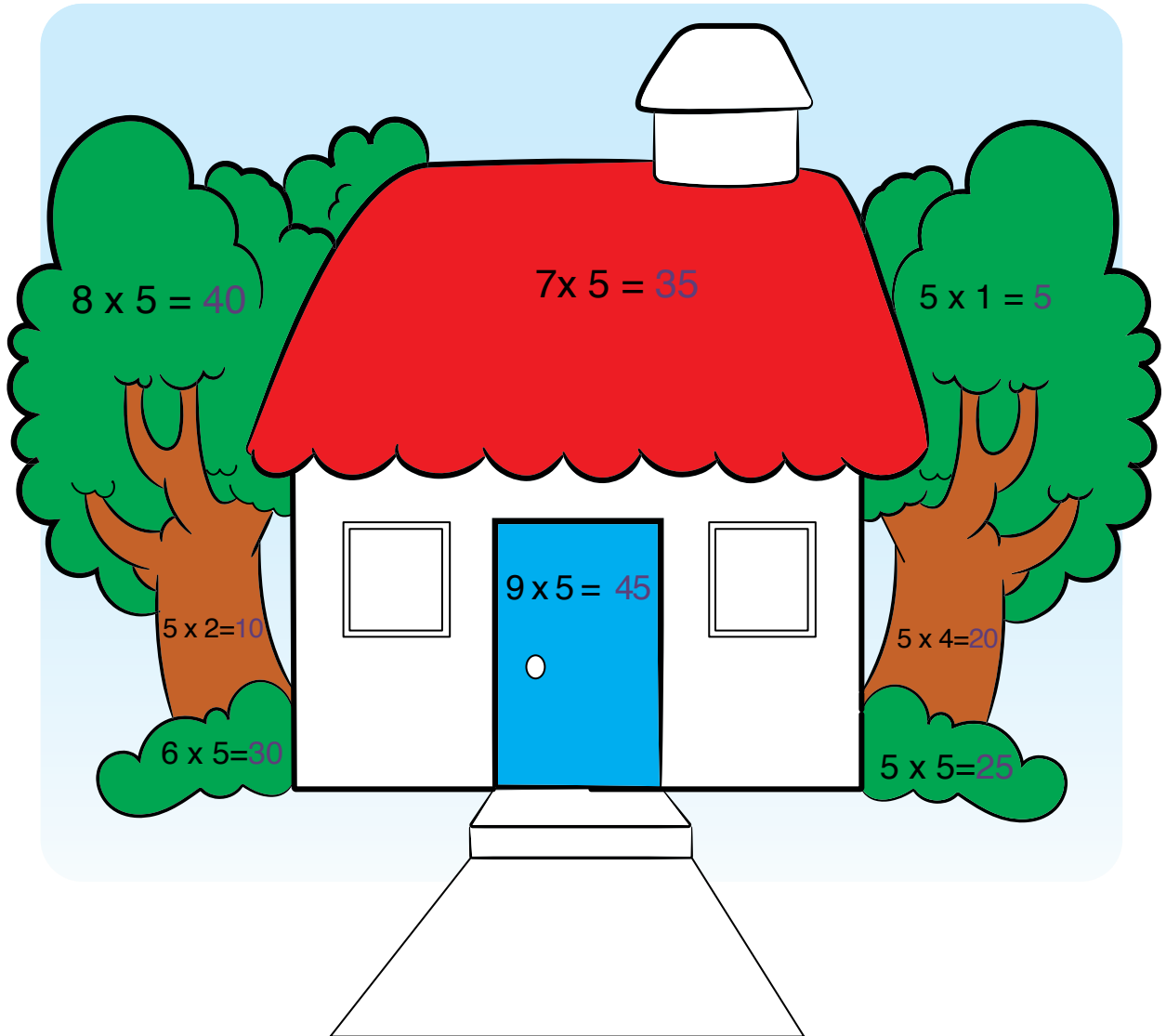
5 = green	30 = green
10 = brown	40 = green
35 = red	45 = blue
20 = brown	25 = green
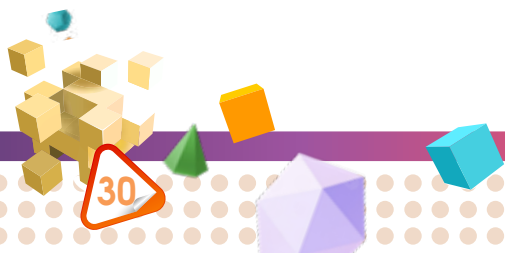
⊙—| (2-4) Division

Sara wants to share 12 books with her sister and her brother equally. How many books will each one take?   **4 books each**
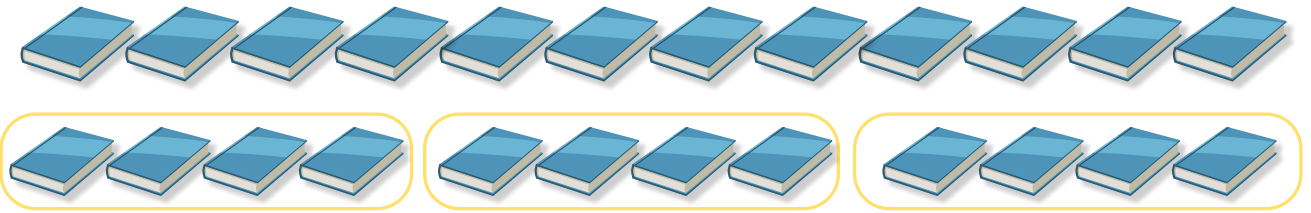
You can use a multiplication fact to find how many threes are in 12. since 4 X 3= 12, you know that 12 ÷ 3= 4

⊙ Find:

1. How many groups of 2?   **8**

2. How many groups of 4?   **2**

3. How many groups of 5?   **3**
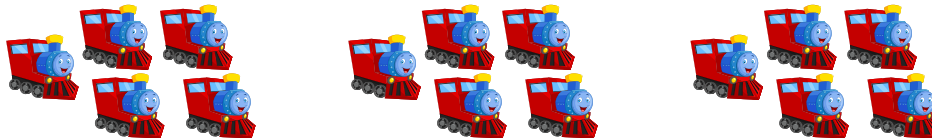
4. How many groups of 10?   **1**
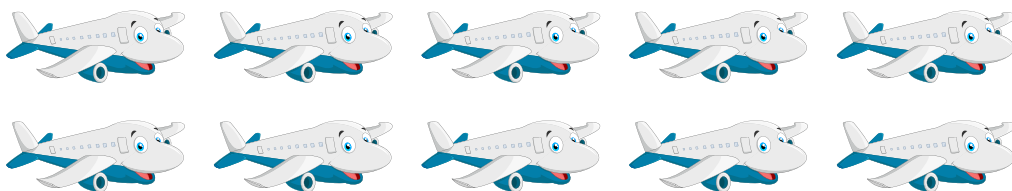
Division is the inversion operation of multiplication. That means that you can use multiplcation facts to find division facts.

$6 \overline{)24}$

$6 \times \boxed{?} = 24$ $6 \times 4 = 24$

So $24 \div 6 = 4$

$9 \overline{)18}$

$9 \times \boxed{2} = 18$ So $18 \div 9 = \boxed{2}$

$7 \overline{)35}$

$7 \times \boxed{5} = 35$ So $35 \div 7 = \boxed{5}$

$9 \overline{)63}$

$9 \times \boxed{7} = \boxed{63}$ So $\boxed{63} \div \boxed{9} = \boxed{7}$

$8 \overline{)56}$

$\boxed{8} \times \boxed{7} = \boxed{56}$ So $\boxed{56} \div \boxed{8} = \boxed{7}$

$1 \overline{)12}$

$\boxed{1} \times \boxed{12} = \boxed{12}$ So $\boxed{12} \div \boxed{1} = \boxed{12}$

◎ **Divide.**

14 ÷ 2 = **7**   30 ÷ 5 = **6**   49 ÷ 7 = **7**

18 ÷ 6 = **3**   9 ÷ 9 = **1**   20 ÷ 4 = **5**

15 ÷ 5 = **3**   28 ÷ 4 = **7**   81 ÷ 9 = **9**

72 ÷ 8 = **9**   21 ÷ 3 = **7**   42 ÷ 7 = **6**

Your Work

● **How many (8s) are in 32?**   **32 ÷ 8 = 4**

● **How many (4s) are in 32?**   **32 ÷ 4 = 8**

● **How many (2s) are in 32?**   **32 ÷ 2 = 16**

(2-5) Problem Solving

Solve the following problems:

● Adam's school had a cookout day. The parents helped cook the food. They cooked 3,305 pizzas. In one hour, 1,722 pizzas were eaten.
How many pizzas were left?

3,305 - 1,722 = 1,583 pizzas are left

● Omar scored 8,776 points in a fighting game.

Ali scored 2,550 less points than Omar.

How many points did Ali score?

8,776 - 2,550 = 6,226 points

● Sara has 24 cookies. She gave an equal

number of cookies to 4 friends.

How many cookies did each friend get?

24 ÷ 4 = 6 cookies

● Tala had 9 books. She put them into 3 equal stacks.
How many books were in each stack?

9 ÷ 3 = 3 books

○ **Find:**

2,350
+ 4,689
7,039

1,608
+ 2,917
4,252

7,625
- 6,574
1,051

9,300
- 6,714
2,586

3 × 7 = **21**

8 × 4 = **32**

5 × 6 = **30**

9 × 9 = **81**

12 ÷ 3 = **4**

63 ÷ 7 = **9**

30 ÷ 5 = **6**

10 ÷ 10 = **1**

Fractions

Vocabulary

- Whole
- Fraction
- Part of a whole
- Numerator
- Adding fractions
- Set
- Part of a set
- Denominator
- Subtracting fractions

Objectives

- Identify the fraction as a part of a whole.
- Identify the fraction as a part of a set.
- Write the numerator and the denominator of the fraction.
- Add fractions with the same denominator.
- Subtract fractions with the same denominator.

⊙ ┤ (3-1) Identify Fractions

$= \dfrac{2 \leftarrow \text{numerator} \ \text{(parts shaded of the whole)}}{3 \leftarrow \text{denominator} \ \text{(parts in whole)}}$
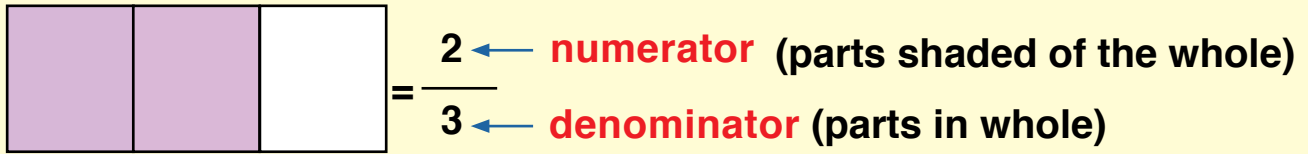
A fraction is a part of a whole, when we divide the whole into equal parts.

$= \dfrac{2 \leftarrow \text{numerator} \ \text{(parts shaded of the whole)}}{3 \leftarrow \text{denominator} \ \text{(parts in whole)}}$
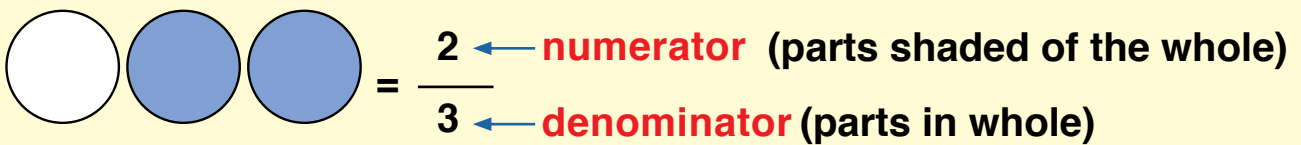
A fraction can also be a part of a set.

⊙ Circle the fraction that is shaded.

| $\dfrac{1}{2}$ | $\dfrac{1}{3}$ | $\dfrac{1}{4}$ |

| $\dfrac{1}{4}$ | $\dfrac{2}{4}$ | $\dfrac{3}{4}$ |

| $\dfrac{1}{5}$ | $\dfrac{2}{5}$ | $\dfrac{4}{5}$ |

| $\dfrac{1}{6}$ | $\dfrac{2}{6}$ | $\dfrac{4}{6}$ |

| $\dfrac{2}{10}$ | $\dfrac{5}{10}$ | $\dfrac{8}{10}$ |

| $\dfrac{1}{3}$ | $\dfrac{2}{3}$ | $\dfrac{3}{3}$ |
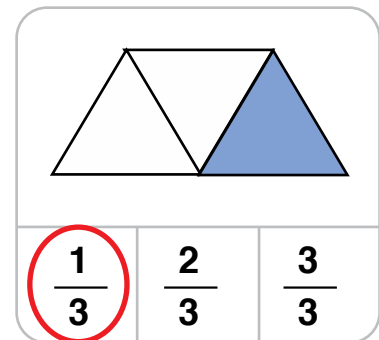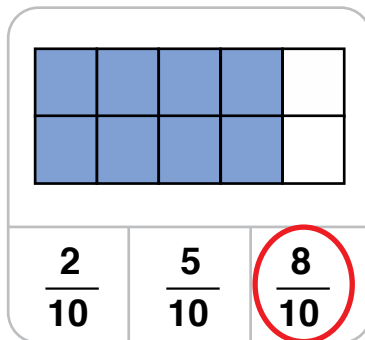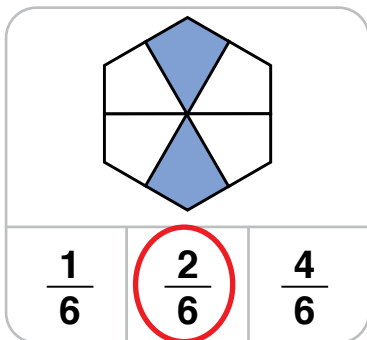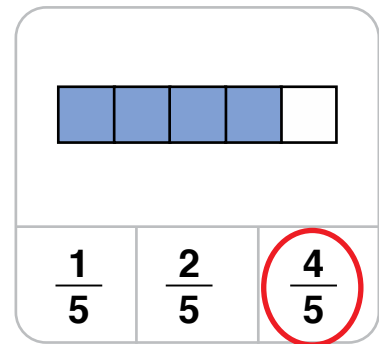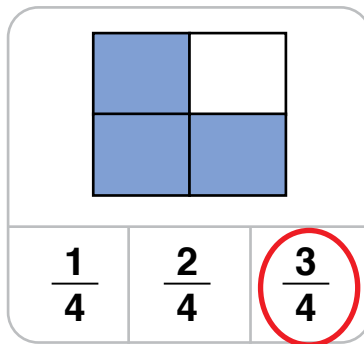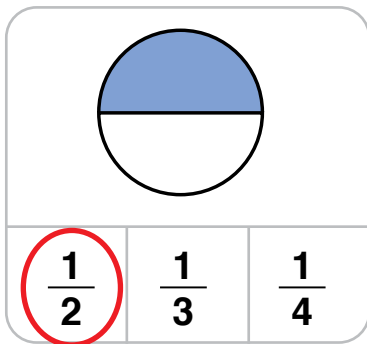
⦿ Write the fraction that is shaded.
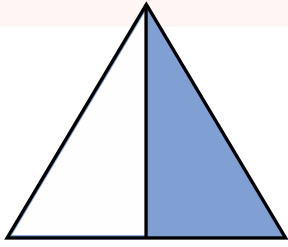
$\dfrac{1}{2}$

The numerator is (1),
and the denominator is (2)
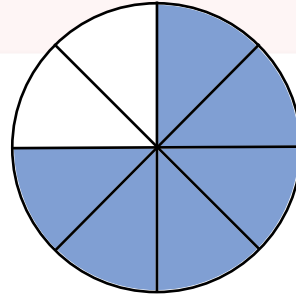
$\dfrac{6}{8}$

The numerator is (6),
and the denominator is (8)
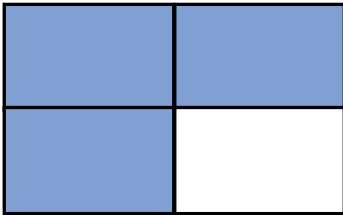
$\dfrac{3}{4}$

The numerator is (3),
and the denominator is (4)

$\dfrac{3}{8}$
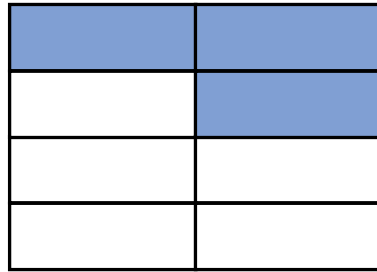
The numerator is (3),
and the denominator is (8)
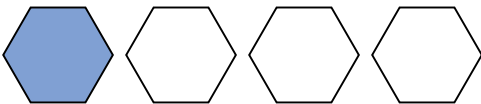
$\dfrac{1}{4}$

The numerator is (1),
and the denominator is (4)
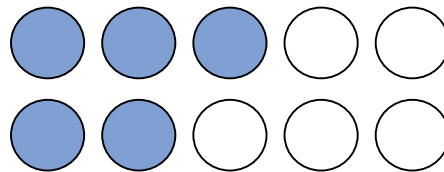
$\dfrac{5}{10}$

The numerator is (5),
and the denominator is (10)

⊙ Color in each fraction amount.
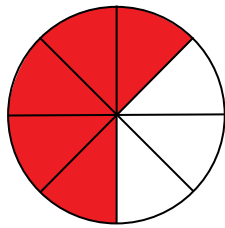
$\dfrac{5}{8}$
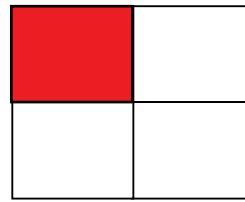
$\dfrac{1}{4}$
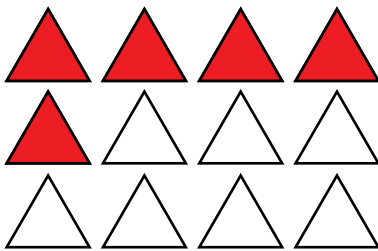
$\dfrac{5}{12}$
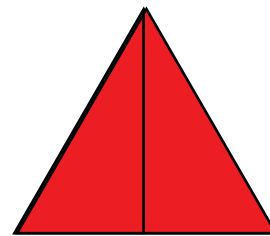
$\dfrac{2}{2}$
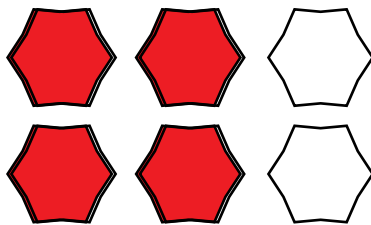
$\dfrac{4}{6}$
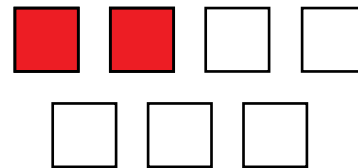
$\dfrac{2}{7}$

⊙ Draw a fraction with a numerator of 3 and a part of the set 8, and then fill in the blank.

The fraction is $\dfrac{3}{8}$.

The numerator is **3**,

and the denominator is **8**
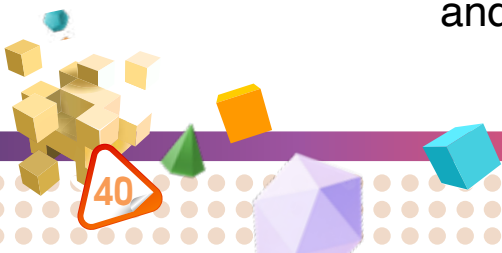
(3-2) Adding Fractions (with the same denominator)

$$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$$

Color, and then find the sum.
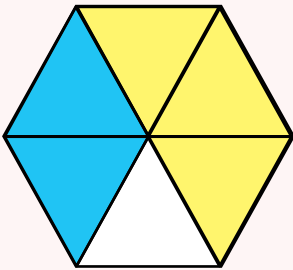
$$\frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$
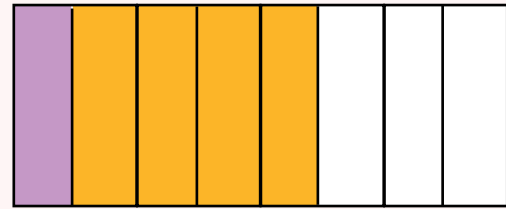
$$\frac{1}{8} + \frac{4}{8} = \frac{5}{8}$$

Fill the blank.

$$\frac{4}{9} + \frac{3}{9} = \frac{7}{9}$$

$$\frac{2}{11} + \frac{5}{11} = \frac{7}{11}$$

$$\frac{1}{14} + \frac{7}{14} = \frac{8}{14}$$

$$\frac{11}{15} + \frac{2}{15} = \frac{13}{15}$$

$$\frac{5}{8} + \frac{1}{8} = \frac{6}{8}$$

$$\frac{10}{17} + \frac{5}{17} = \frac{15}{17}$$

⊙ **Draw the figure to find the sum of** $\dfrac{1}{3} + \dfrac{2}{3} = \boxed{\dfrac{3}{3}}$
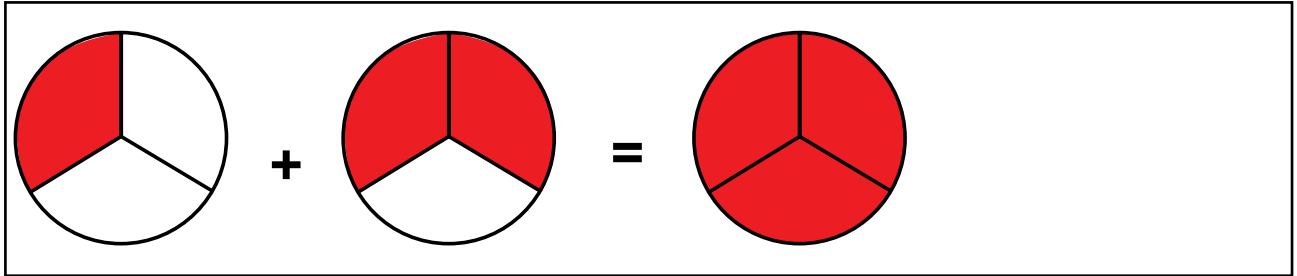
⊙ **Show, how to find the sum of** $\dfrac{12}{23} + \dfrac{7}{23}$

$$\dfrac{12}{23} + \dfrac{7}{23} = \dfrac{19}{23}$$

⊙ **Draw the shape of** $\dfrac{3}{10} + \dfrac{6}{10}$

$$\dfrac{3}{10} + \dfrac{6}{10} = \dfrac{9}{10}$$

$$\frac{3}{4} - \frac{1}{4} = ?$$
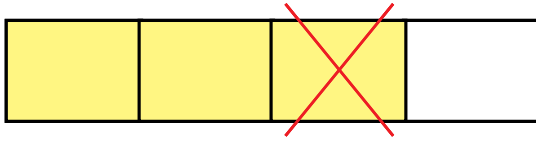
$$\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$$

Color, and find.
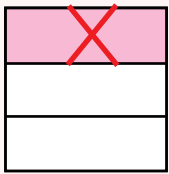
$$\frac{3}{3} - \frac{1}{3} = \frac{2}{3}$$
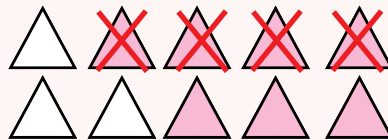
$$\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$$
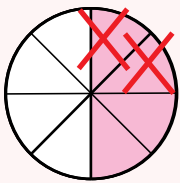
$$\frac{4}{8} - \frac{2}{8} = \frac{2}{8}$$
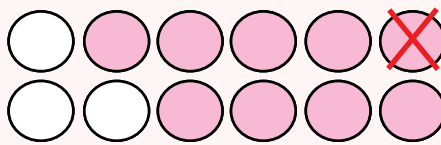
$$\frac{9}{12} - \frac{1}{12} = \frac{8}{12}$$

Fill the blank.

$$\frac{7}{16} - \frac{2}{16} = \frac{5}{16}$$

$$\frac{9}{9} - \frac{3}{9} = \frac{6}{9}$$

$$\frac{27}{42} - \frac{9}{42} = \frac{18}{42}$$

$$\frac{11}{25} - \frac{2}{25} = \frac{9}{25}$$

$$\frac{11}{14} - \frac{7}{14} = \frac{4}{14}$$

$$\frac{6}{8} - \frac{2}{8} = \frac{4}{8}$$

⊙ **Draw the figure to find the answer.**
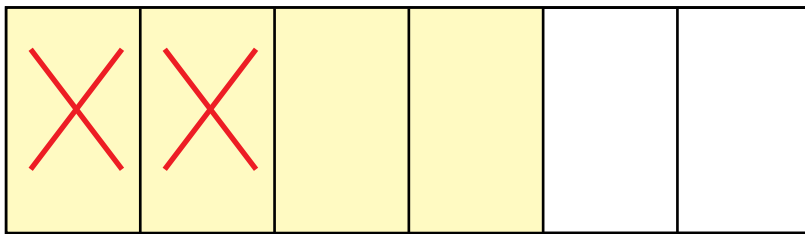
$$\frac{4}{6} - \frac{2}{6} = \boxed{\frac{2}{6}}$$

⊙ **Draw the Shape of** $\frac{5}{9} - \frac{2}{9} = \frac{3}{9}$
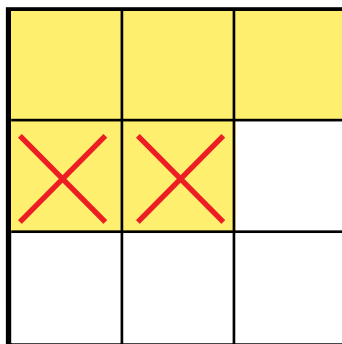
⊙ **Find.**

a) $1 - \frac{3}{5} =$ $\frac{5}{5} - \frac{3}{5} = \frac{2}{5}$

b) $1 - \frac{3}{10} =$ $\frac{10}{10} - \frac{3}{10} = \frac{7}{10}$
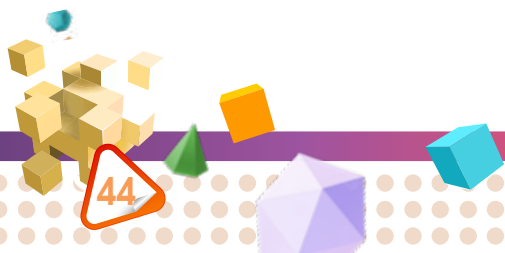
a
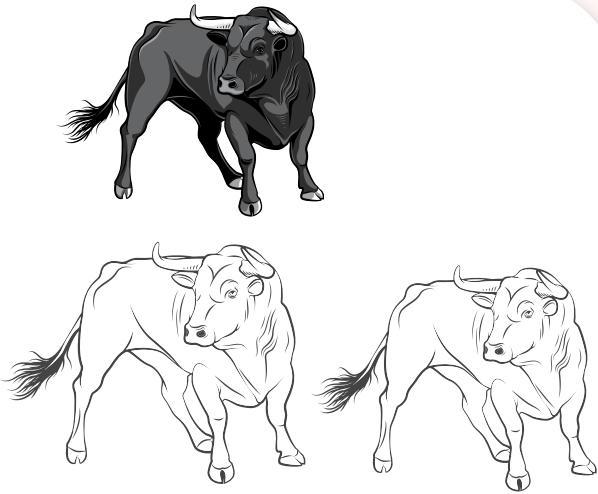
What fraction of the buffaloes is black?

▶ **Answer:** $\dfrac{1}{3}$

b
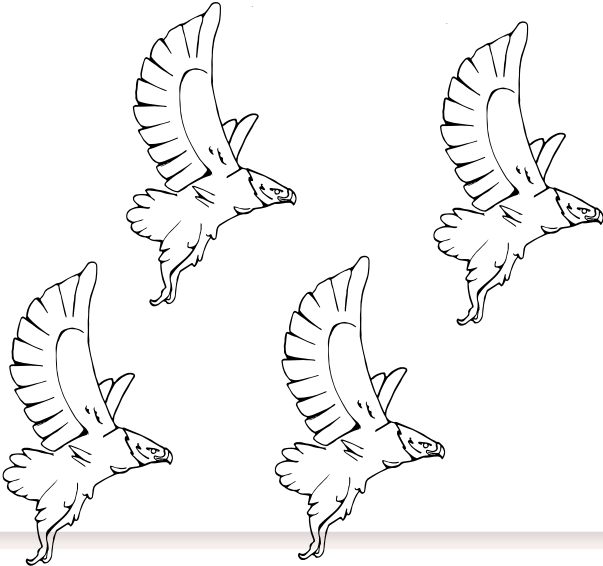
What fraction of birds is white?

▶ **Answer:** $\dfrac{4}{4}$

c
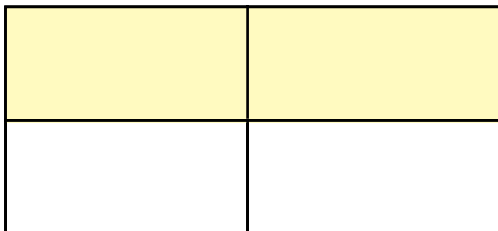
Color the shape to show $\dfrac{2}{4}$.

◉ Circle the shape that is $\dfrac{1}{4}$ gray.
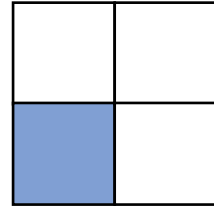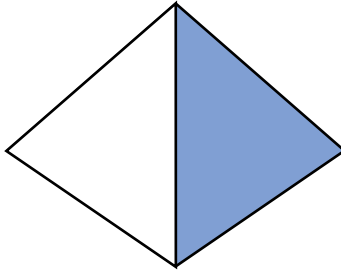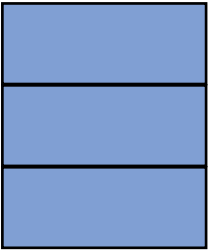
◉ Circle the fraction that shows the colored part.
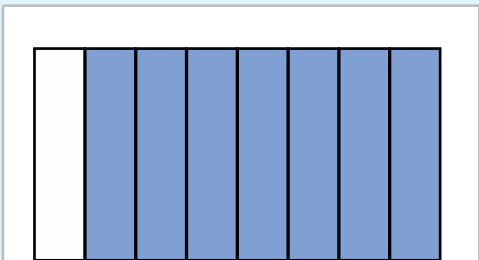
$\dfrac{1}{8}$	$\dfrac{5}{8}$	$\left(\dfrac{7}{8}\right)$
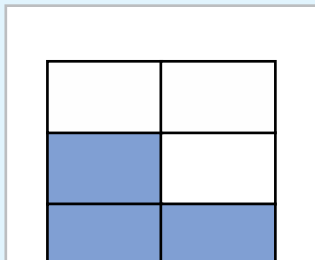
$\left(\dfrac{3}{6}\right)$	$\dfrac{5}{6}$	$\dfrac{6}{6}$
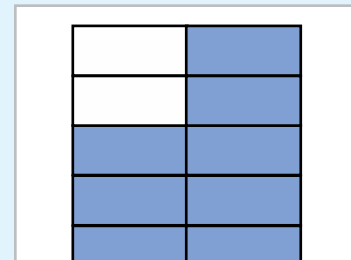
$\dfrac{2}{10}$	$\dfrac{4}{10}$	$\left(\dfrac{8}{10}\right)$

◉ Color three parts of each shape then write the fraction.
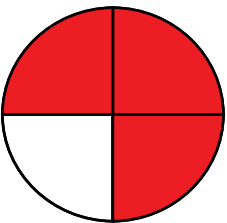
$\dfrac{3}{4}$
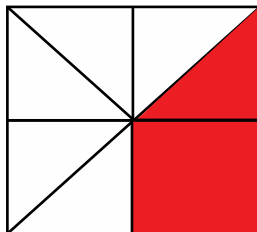
$\dfrac{3}{8}$
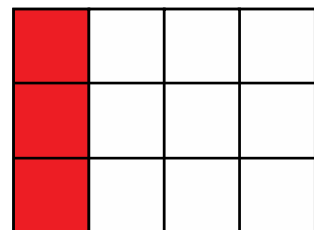
$\dfrac{3}{12}$

◉ Find the following:

$$\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$$

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

$$\frac{5}{8} + \frac{12}{8} = \frac{17}{8}$$

$$\frac{10}{17} - \frac{9}{17} = \frac{1}{17}$$

$$\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$$

$$\frac{5}{7} - \frac{1}{7} = \frac{4}{7}$$

$$\frac{7}{30} + \frac{3}{30} = \frac{9}{30}$$

$$\frac{19}{19} - \frac{7}{19} = \frac{12}{19}$$

◉ Draw the shape to show $\frac{3}{4}$.

120

110

100

90

80

70

60

50
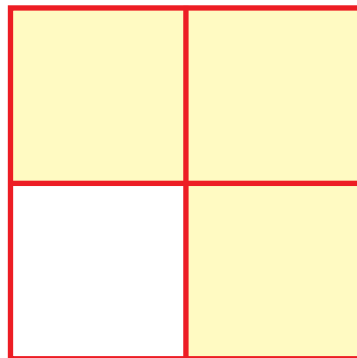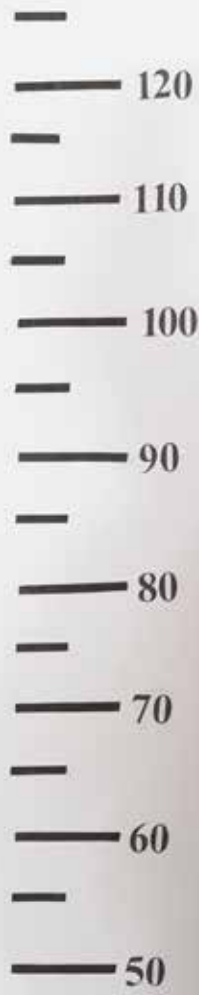
Unit **4**

Measurements

Vocabulary

- Volume
- Mass
- Kilogram (kg)
- Past
- Islamic calendar
- Muharram
- Safar
- Rabi al-Awwal
- Rabi al-Thani
- Jumada al-Awwal
- Jumada al-Thani
- Rajab

- Sha`ban
- Ramadan
- Shawwal
- Thu al-Qi`dah
- Thu al-Hijah
- Jordanian dinnar (JD)
- Cubic unit
- Gram (g)
- Analog clock
- Half-past
- Money

Objectives

- Find the volume of an object.
- Identify the mass of an object.
- Telling the time.
- Identify the Islamic calendar.
- Problem solving using (JD) money.
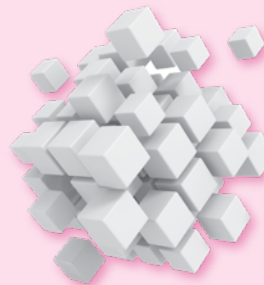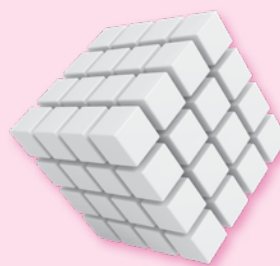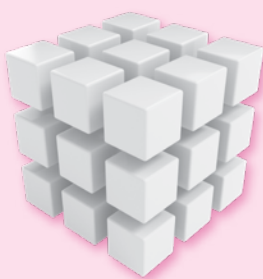
(4-1) Mass

Mass is a measure of how heavy something is.

▶ **We measure mass in grams and kilograms. (1000g = 1kg)**

▶ Circle the lighter object.

▶ Circle the heavier object.

▶ Circle the heavier object.
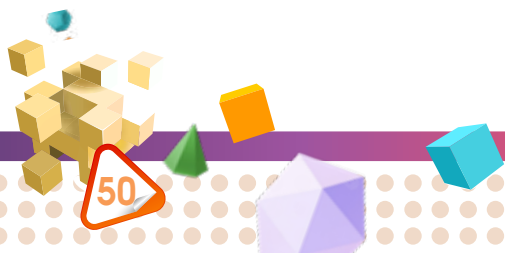
Match with the suitable mass.

(10 Kg)	10 g

(5 Kg)	5 g

4 Kg	(4 g)

(47 Kg)	47 g

Measure the mass of each object.

8 kg

700 g

8 Kg
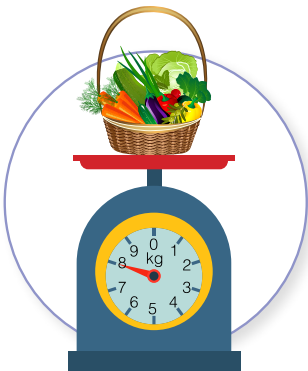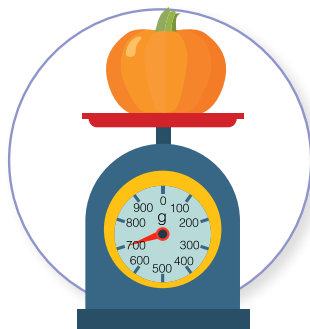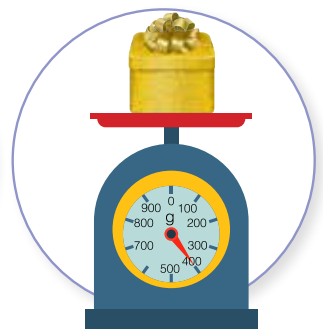
400 g

(4-2) Volume

Volume is the amount of space an object takes up.
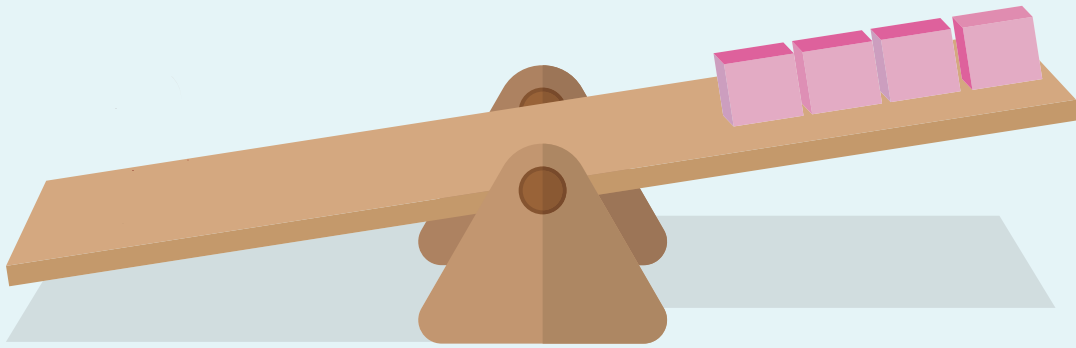
The unit of volume is a [cube] = 1 cubic unit.

⦿ Finding volume.
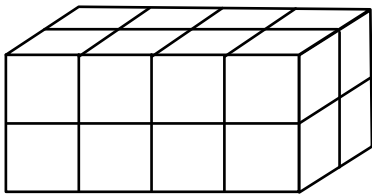
Volume 16 cubic units
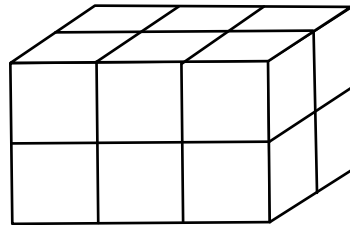
Volume __12__ cubic units
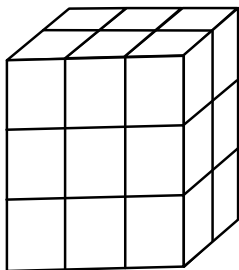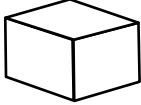
Volume __18__ cubic units
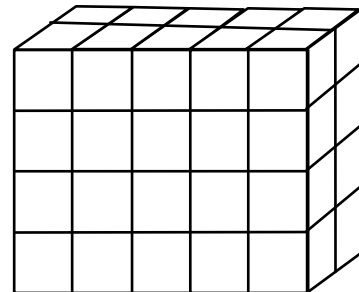
Volume __18__ cubic units

Count the cubes and write the volume of each object. (note ⬜ = 1 cm³).
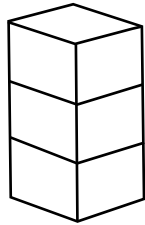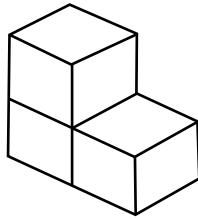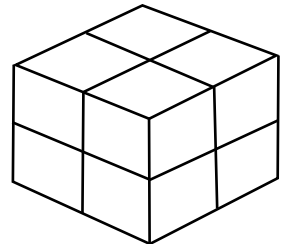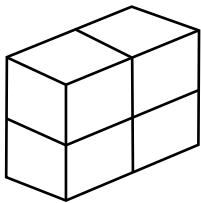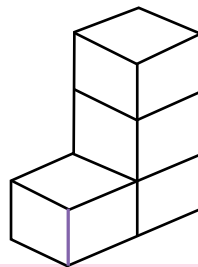
3 cm³	_3_ cm³	_8_ cm³
_4_ cm³	_4_ cm³	_5_ cm³
_6_ cm³	_5_ cm³	_4_ cm³
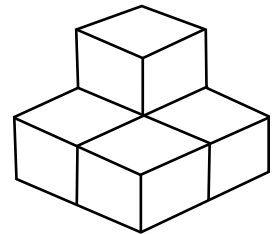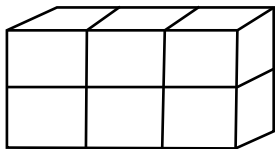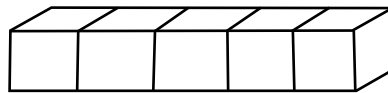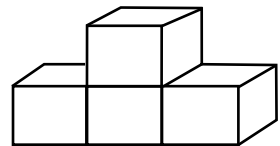
Arrange the volume of objects in ascending order.

A 16
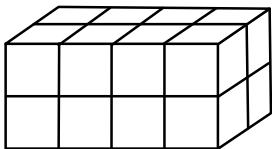
B 12
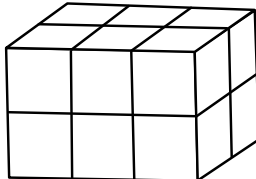
C 18
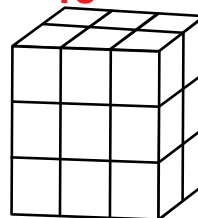
D 24
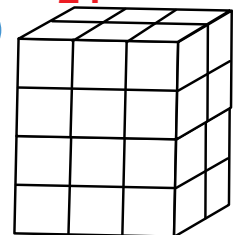
The order is _B_ , _A_ , _C_ , _D_ .

Analog clock

- The short hand represents the hours.
- The long hand represents the minutes.
- There are 12 hours on an analog clock.
- Every hour has 60 minutes.
  (1 hour = 60 minutes).

O`clock

12
11   5 to   5 past   1
10   10 to   10 past   2
to   9   quarter to   quarter past   3   Past
8   20 to   20 past   4
25 to   25 past
7   6   5

Half past
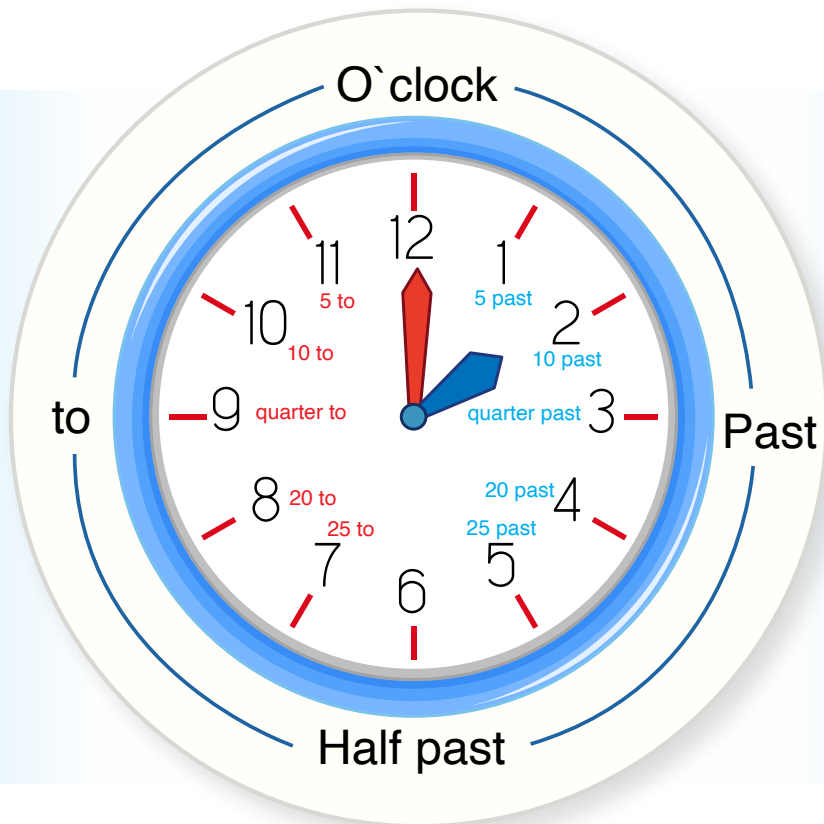
- Quarter past 4 means 4:15
- Quarter to 4 means 3:45
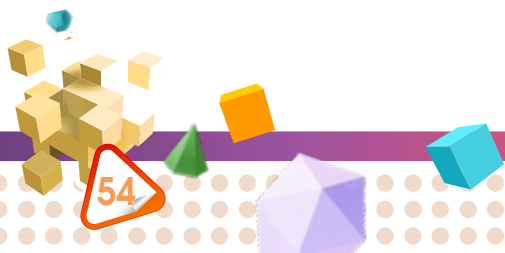
10:15

4:05

6:35

9:20

◉ Guided practice

What is the time on clock A? **3 : 10**

What is the time on clock B? **8 : 13**

A   B

What is the time on clock A? **9 : 20**

What is the time on clock B? **12 : 05**

A   B

◉ Draw the hands of the clock to show the time.

7 : 45   3 : 25   2 : 55

(4-4) Islamic Calendar

Normal Calendar	Islamic Calendar
January	Muharram
February	Safar
March	Rabi al-Awwal
April	Rabi al-Thani
May	Jumada al-Awwal
June	Jumada al-Thani
July	Rajab
August	Sha`ban
September	Ramadan
October	Shawwal
November	Thu al-Qi`dah
December	Thu al-Hijjah

Answer the questions.

- **What is the first month of the new calendar?** <u>January</u>.
- **What is the last month of the Islamic calendar ?** <u>Thu al-Hijah</u>.
- **The month that comes after July** <u>August</u>.
- **What is the first month of the Islamic calendar ?** <u>Muharram</u>.
- **The 8th month of the Islamic calendar is** <u>Sha'baan</u>.
- **Arrange the months bellow:**

  Sha`ban, Ramdan, Rajab <u>Rajab , Sha'baan , Ramadaan</u>
- **Shawwal is the** <u>**10th**</u> **month of the Islamic calendar.**

(4-5) Money

= 1 JOD

= 5 JOD

= 10 JOD

- **Hassan** buys 3 pizzas and one bottle of juice.

  The total cost is 20 JOD.

  The juice costs 2 JOD.

  How much does one pizza cost?

  $20 - 2 = 18$ $18 \div 3 = 6$ **6 jds**

- **Lana** has 50 JOD to spend on presents.

  She wants to buy 4 mugs, 3 teddy bears and 5 rings.

  What is the total cost of presents? Can she buy all

  the things that she wants? **Yes she can**

  2 JOD

  6 JOD

  3 JOD

  $4 \quad 2 = 8 \quad 3 \quad 6 = 18$

  $3 \quad 5 = 15$ $8 + 18 + 15 = 41$ $50 - 41 = 9$

- **Zaid** wants to buy a computer and a printer for his office.

  The computer costs 500 JOD and the printer costs 220 JOD.

  How much money does he need?

  $500 + 220 = 720$ jds

◎ **Find the mass.**

A
1Kg 1Kg 1Kg
1Kg 1Kg 1Kg
1Kg 1Kg 1Kg
___9___ kg

B
1KG
1KG 1KG
___3___ kg

C
2 KG
2 KG 2 KG
2 KG 2 KG 2 KG
___12___ kg
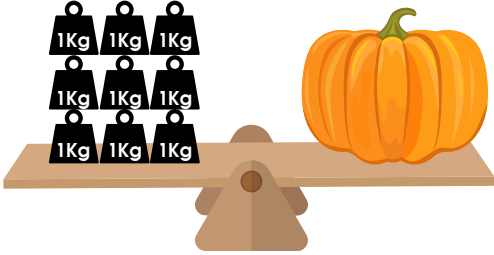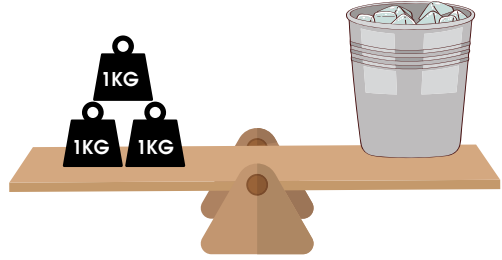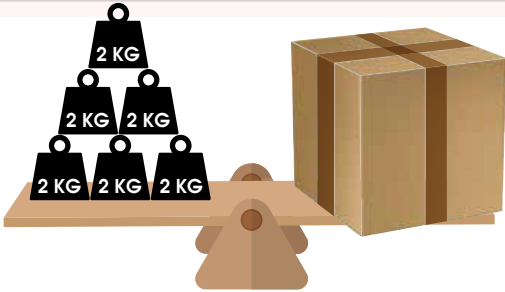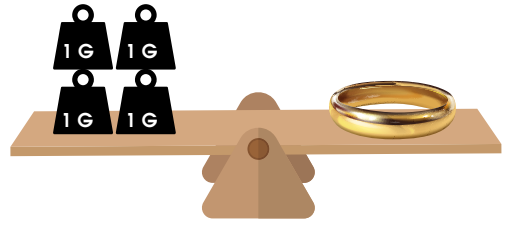
D
1 G 1 G
1 G 1 G
___4___ g

● Which object is the heaviest? **the box**
● Which object is the lightest? **the ring**

◎ **Write the correct time.**

12 : 30   **2 : 30**   **7 : 00**   **4 : 24**

⊙ Find the volume then answer.
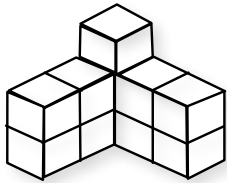
a
Volume = **11** cm³
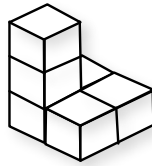
b
Volume = **6** cm³
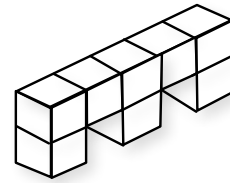
c
Volume = **8** cm³
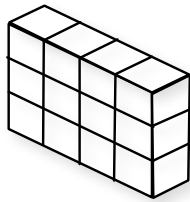
d
Volume = **12** cm³
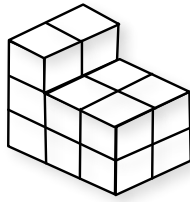
e
Volume = **14** cm³
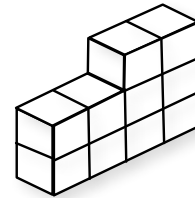
f
Volume = **10** cm³
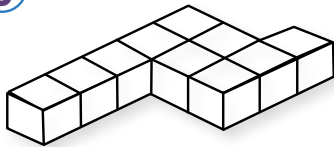
g
Volume = **10** cm³
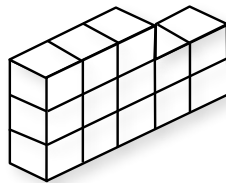
h
Volume = **13** cm³
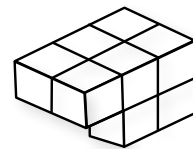
i
Volume = **10** cm³

- **Which model has the greatest volume?** _____ **e** _____

- **Which model has a volume of 11 cm³?** _____ **a** _____

- **Which model has a volume of 10 cubic centimeters?** _____ **g / i**

- **Which model has the least volume?** _____ **b** _____

Solve the following.

2 JOD	8 JOD	4 JOD	12 JOD	25 JOD
▽	▽	▽	▽	▽

How much money would you need to buy...

- A robot and a yoyo _____27_____ .

- A windmill and a beach ball _____12_____ .

- A bicycle and a robot _____37_____ .

How much change would you get from 100 JOD if you buy a robot and a bicycle?

- 25 + 12 = 37

- 100 - 37 = 63 jds

-

Unit 5

Geometry and Patterns

- Shape
- Circle
- Square
- Side
- Solid shapes
- Cube
- Square pyramid
- Cylinder
- Face
- Geometric patterns
- Oval
- Triangle
- Rectangle
- Vertex (corner)
- 3-Dimentional shape
- Cubical (rectangular prism)
- Sphere
- Cone
- Edge
- Number patterns

◎ Objectives

- Recognize the names of 2-D shapes.
- Recognize the solid shapes.
- Recognize shapes and numbers into patterns.
- Complete the missing patterns.

- The shape is a place figure (flat surface).
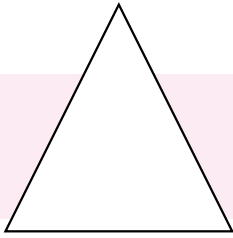
triangle
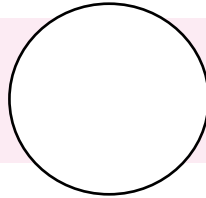
circle

rectangle
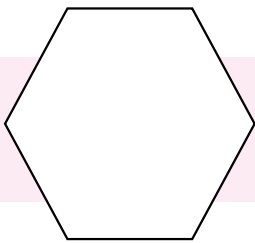
hexagon

square
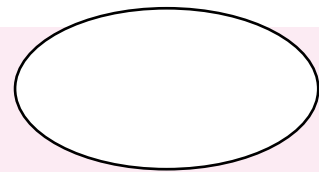
oval
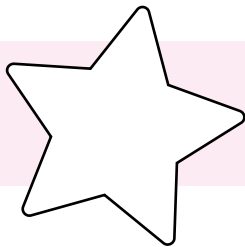
star

diamond

octagon

Vertex

Side

Side

Vertex

Vertex
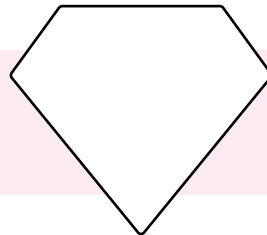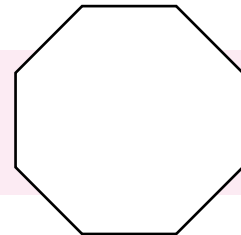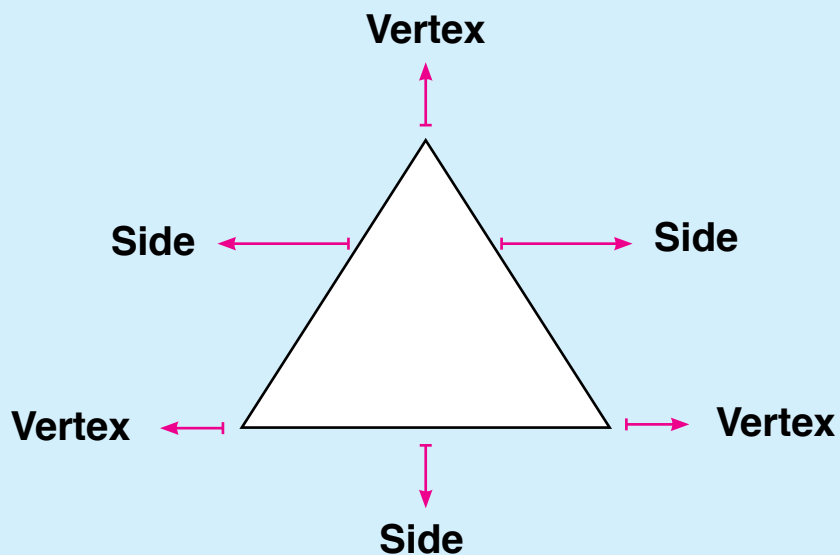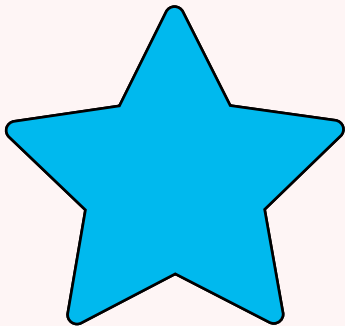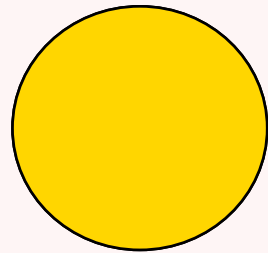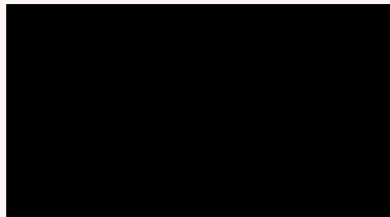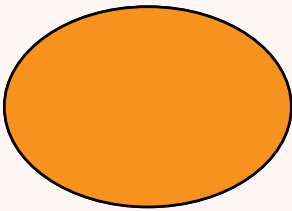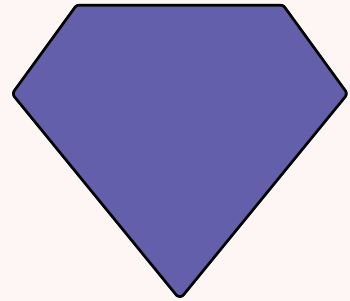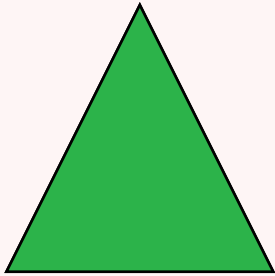
Side

circle = yellow

oval = orange

square = red

triangle = green

star = blue

hexagon = pink

diamond = purple

rectangle = black
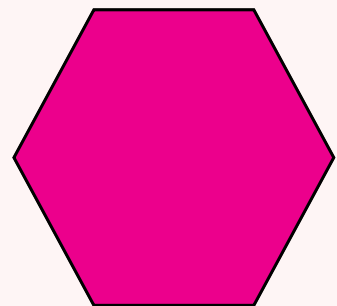
How many sides and vertices in each shape.
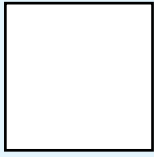
Shape		
Sides	4
Vertices	4
Sides	0
Vertices	0
Sides	3
Vertices	3
Sides	4
Vertices	4
Sides	6
Vertices	6
Sides	8
Vertices	8
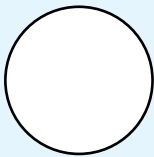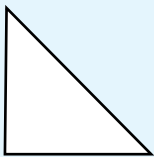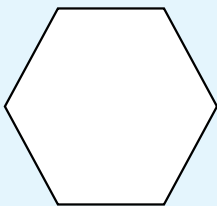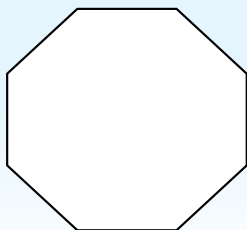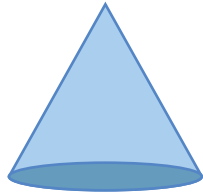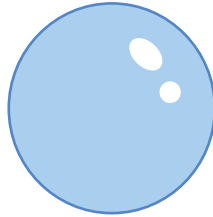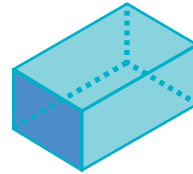
cone	sphere	cubed (ractangular prism)
2 faces	1 face	6 faces
1 edge	1 edge	12 edges
1 vertices	0 vertices	8 vertices
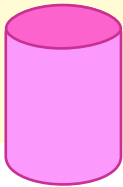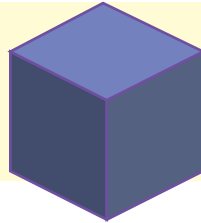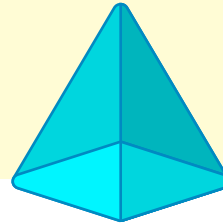
cylinder	cube	pyramid
3 faces	6 faces	5 faces
2 edges	12 edges	8 edges
0 vertices	8 vertices	5 vertices

◉ **A solid shape is a figure of 3-dimensional object.**

Vertex

Face

Edge
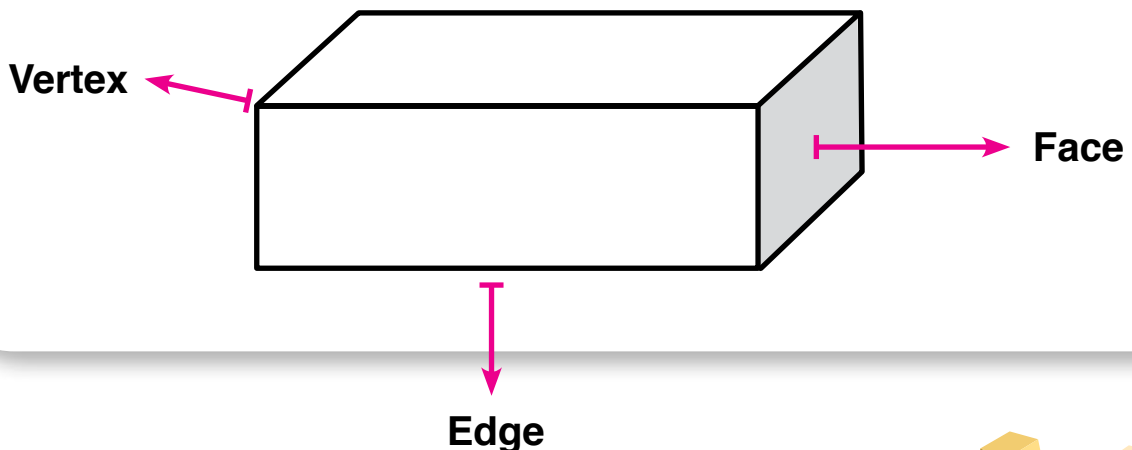
◎ **Name each of these solid shapes below.**
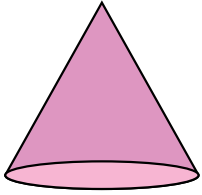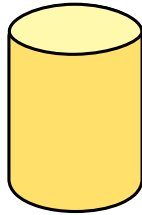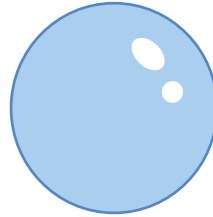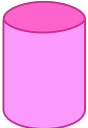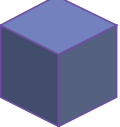
| Cone | Cylinder | Sphere | Pyramid |
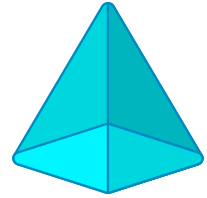
◎ **Fill in the table.**

	The name	Number of faces	Number of sides	Number of vertices
	Cylinder	3	2	0
	cube	6	12	8
	Pyramid	5	8	5
	Sphere	1	1	0
	Cone	2	1	1
	cube	6	12	8

Color the 2D-shapes green and the 3D-shapes yellow.
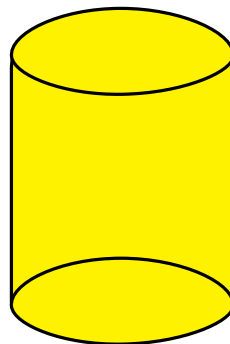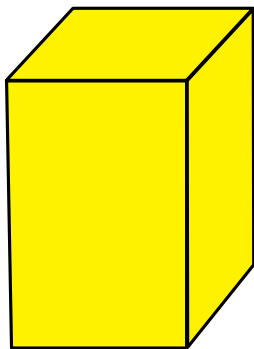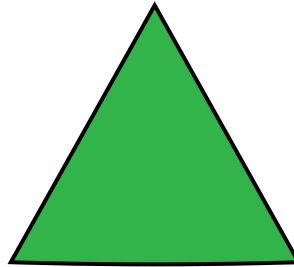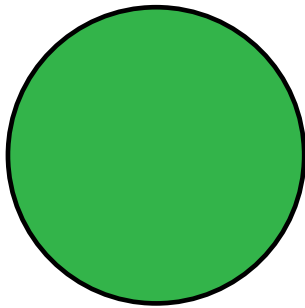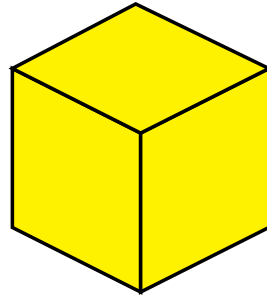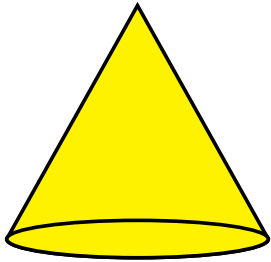
(5-3) Geometric Patterns

A geometric Pattern: is a pattern made from geometric shapes.

Draw to complete each pattern with the next figure.
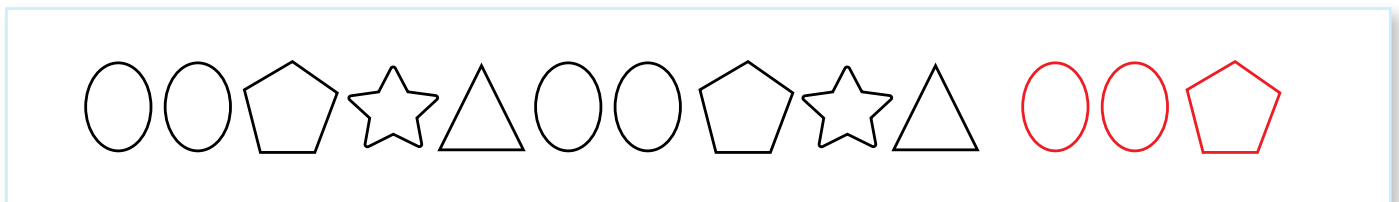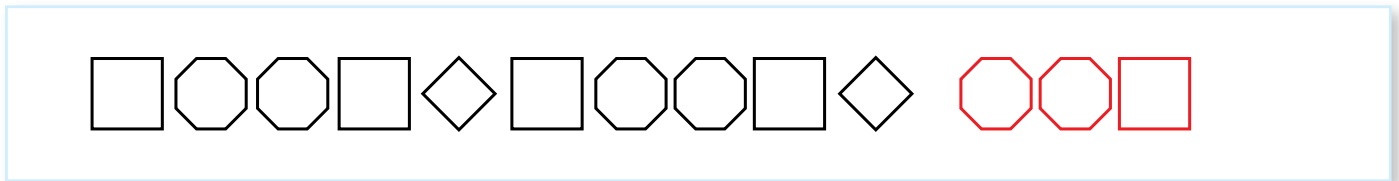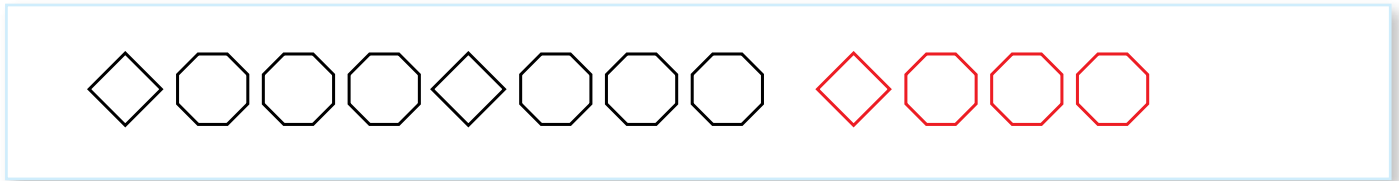
Draw the missing shape to complete the pattern.
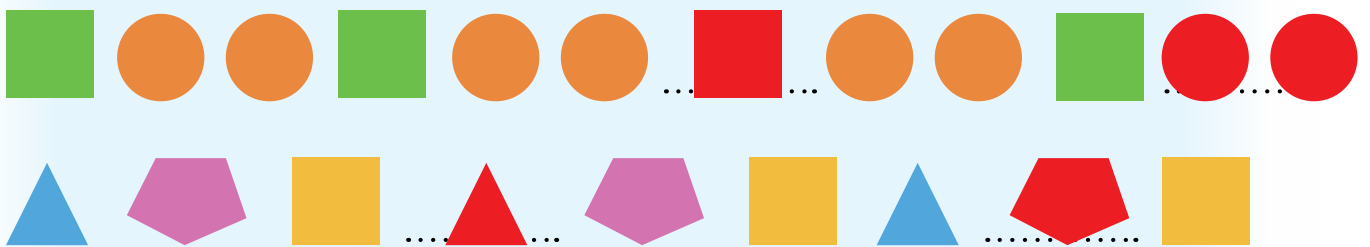
Your Work

Draw your geometric Pattern.
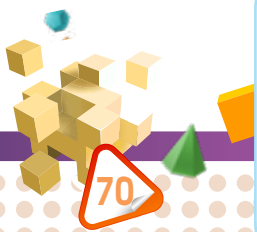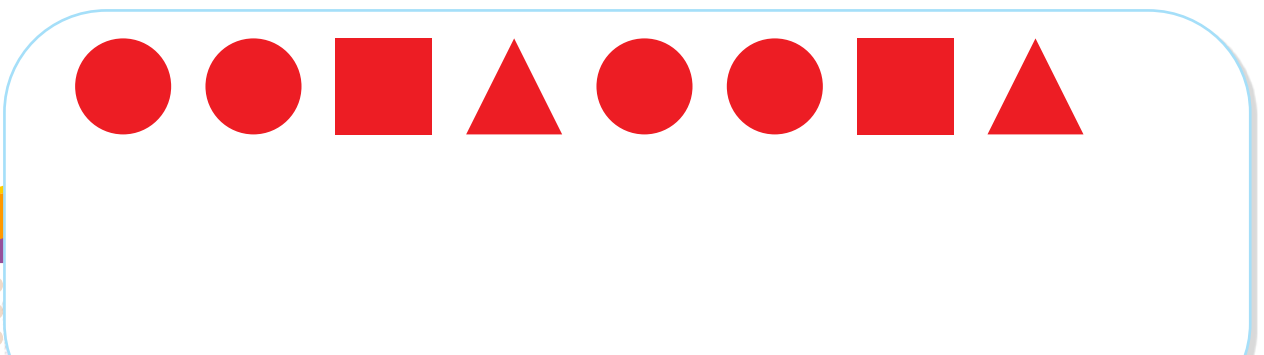
Number Pattrens are patterns made from numbers.

Write the missing numbers to continue the patterns.

(a) 1   3   5   1   3   5   1   _3_   _5_   _1_   _3_   _5_

(b) 3   2   6   3   2   6   3   2   _6_   _3_   _2_   _6_

(c) 4   5   7   4   5   7   _4_   5   _7_   _4_   _5_   _7_

(d) 1   1   2   1   1   2   _1_   _1_   2   _1_   _1_   _2_

Complete the patterns.

(a) 2, 4, 6, 8, 10, _12_, _14_, _16_

(b) _1_ , _4_ , 7, 10, 13, 16, _19_ , 22, 25, _28_ , _31_ , _34_

(c) 65, 60, 55, 50, _45_, _40_, _35_, _30_, _25_

(d) $\dfrac{1}{10}$, $\dfrac{2}{10}$, $\dfrac{3}{10}$, $\dfrac{4}{10}$, $\dfrac{5}{10}$, $\dfrac{6}{10}$, $\dfrac{7}{10}$, $\dfrac{8}{10}$, $\dfrac{9}{10}$, $\dfrac{10}{10}$
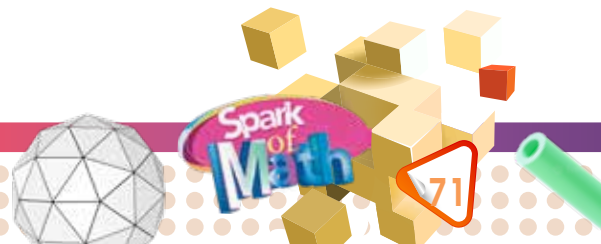
⊙ **Write the missing numbers.**

5 ➡ 10 ➡ 15 ➡ 20 ➡ 25 ➡

4   8   12   16   20

3   6   9   12   15

2   4   6   8   10

7   14   21   28   35

8   16   24   32   40

10   20   30   40   50

◎ **How many sides and vertices are in each shape.**
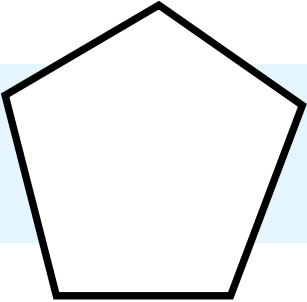
Sides	**5**
Vertices	**5**
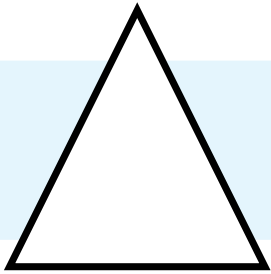
Sides	**3**
Vertices	**3**
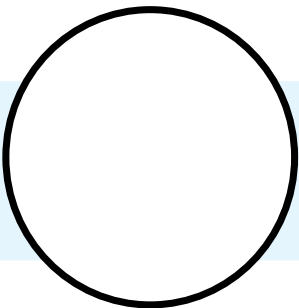
Sides	**4**
Vertices	**4**

Sides	**0**
Vertices	**0**

- **circle**
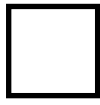
- **rectangle**
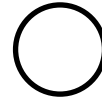
- **square**
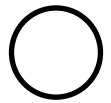
- **Star**
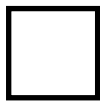
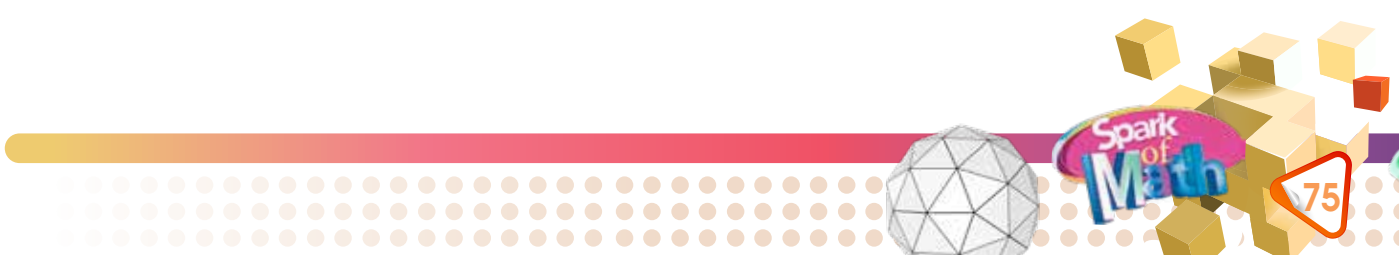- **hexagon**
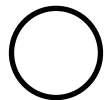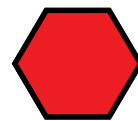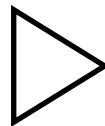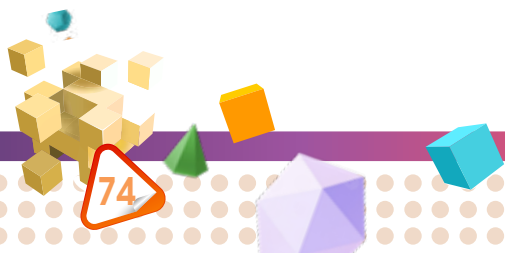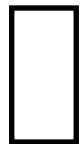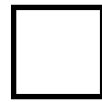
- **triangle**
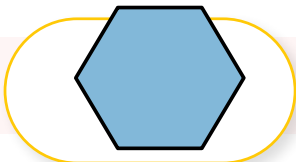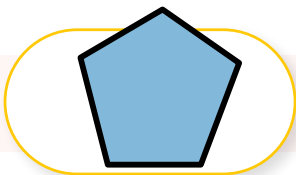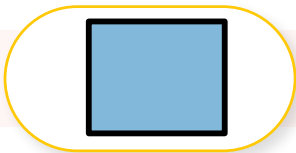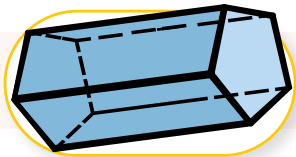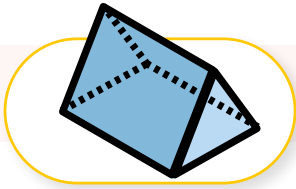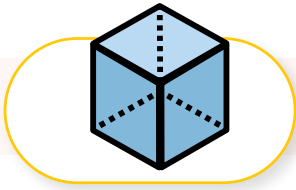
It has 4 vertices.

It has 7 faces.

It has 5 sides.

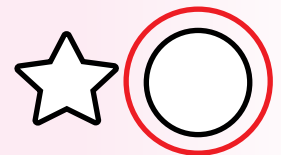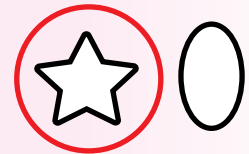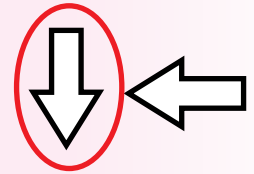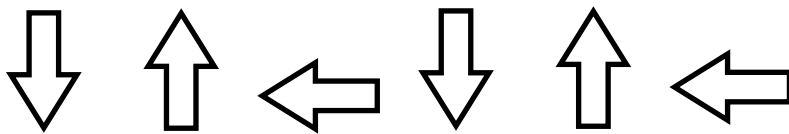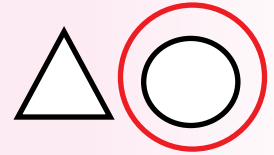It has 6 sides.

It has 6 faces and 8 vertices.

It has two triangle faces.

Circle the picture that continues the pattern. Color the picture.

○ △ □ ○ △ □   △ (○)

⬇ ⬆ ⬅ ⬇ ⬆ ⬅   (⬇) ⬅

☆ ◇ ⬭ ☆ ◇ ⬭   (☆) ⬭

☆ ☆ ○ ○ ☆ ☆   ☆ (○)

◇ ⬇ △ □ ◇ ⬇ △ □   (◇) △
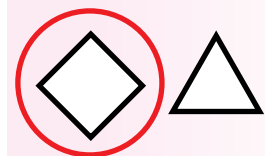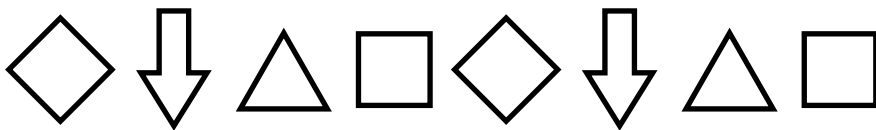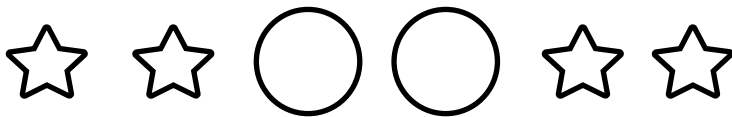
Complete the patterns, and then write the rule.

12	16	**20**	24	**28**

Rule: .... **+ 4** ....

17	**19**	21	**23**	25

Rule: .... **+ 2** ....

30	40	50	**60**	70

Rule: .... **+ 10** ....

84	74	**64**	54	**44**

Rule: .... **- 10** ....

Spark of Math