Summer Review Work For Students Entering Algebra 1 Honors

The attached packet is being given as a review of math topics that you should be comfortable with. These will be necessary skills for success in Algebra 1 Honors class. Your packet will be collected during the first week of school. It will be graded on completeness and correctness. After giving you an opportunity to ask questions and get clarification, you will be assessed on this content. Please use a pencil and make sure to show relevant work. You will lose points if you fail to show the required work to reach the correct answers.

Please do not wait until the last day of vacation to get started! On the other hand, do NOT attempt to complete the packet during the first week of vacation. This packet is designed to maintain your current knowledge of math concepts sot that the topics discussed in the fall will be fresh in your mind.

If you have difficulties with the packet, use the examples given or feel free to search the internet for help on certain topics. Also, it may be beneficial to work with others.

Have an enjoyable summer!

I look forward to working with you this fall.

Ms. Ames

1 Basic Arithmetic

Key Terms

addition
subtraction
multiplication
division
sum
difference
product
dividend
divisor
quotient
remainder
mixed operations
bracket
integer/whole number
multiple
factor
prime number
composite number
common multiple
lowest common multiple
common factor
highest common factor
fraction bar
numerator
denominator
proper fraction
improper fraction
mixed fraction
complex fraction

1.1 Four Basic Arithmetic Operations

(a)

Basic operation	Example
Addition	$3 + 9 = 12$ **sum**
Subtraction	$13 - 5 = 8$ **difference**
Multiplication	$2 \times 7 = 14$ **product**
Division	$29 \div 6 = 4 \cdots 5$ **dividend** (29), **divisor** (6), **quotient** (4), **remainder** (5)

(b) In performing **mixed operations**, we should follow the order of operations below:

(i) Perform multiplication (×) and division (÷) first, then addition (+) and subtraction (−).

e.g. **(1)**
$$30 - 6 \times 3$$
$$= 30 - 18$$
$$= 12$$

(2)
$$5 + 14 \div 7$$
$$= 5 + 2$$
$$= 7$$

(ii) When there are only addition / subtraction (or only multiplication / division) in an expression, perform the operations from LEFT to RIGHT.

e.g. **(1)**
$$34 - 15 + 5$$
$$= 19 + 5$$
$$= 24$$

(2)
$$28 \div 4 \times 3$$
$$= 7 \times 3$$
$$= 21$$

(iii) When there are **brackets** in an expression, perform the operations inside the brackets first.

e.g.
$$24 \div (4 \times 2) - 2$$
$$= 24 \div 8 - 2$$
$$= 3 - 2$$
$$= 1$$

Example 1 Calculate the following.

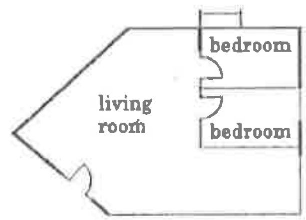
(a) $8 \times 2.5 - 51 \div 3$

(b) $35 \div (16 - 3 \times 2) + 1.5$

Solution **(a)**
$$8 \times 2.5 - 51 \div 3$$
$$= 20 - 17$$
$$= 3$$

(b)
$$35 \div (16 - 3 \times 2) + 1.5$$
$$= 35 \div (16 - 6) + 1.5$$
$$= 35 \div 10 + 1.5$$
$$= 3.5 + 1.5$$
$$= 5$$

Example 2 In each flat of a building, there are a living room with area 50 m^2 and two bedrooms with area 10 m^2 each.



(a) Find the total area of the flat.

(b) If the building has 21 flats, find the sum of the areas of these flats.

Solution

(a) Total area = 10 + 10 + 50
= 70 (m^2)

(b) Sum of areas = 70 × 21
= 1 470 (m^2)

Let's Try 1.1

Calculate the following. **[Nos. 1–4]**

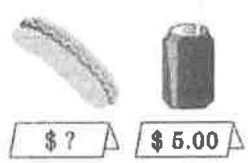
1. 28 − 19 + 7
=

2. 14 + 8 × 12 − 55
= 14 + ☐ − 55
=

3. 16 − (24 − 5 × 3)
= ☐ − (☐ − ☐)
= ☐ − ☐
=

4. (8 − 5.4) ÷ 13 × 2
=

5. Mr Wong orders 3 hot dogs and 2 cans of coke in a fast food shop. The coke is sold at $5 per can and Mr Wong pays $46 in total. Find the price of a hot dog.



1.2 Multiples and Factors

(a) Multiples

$6 \times 1 = 6$
$6 \times 2 = 12$ ← Multiples of 6
$6 \times 3 = 18$
$\vdots$

$\therefore$ The first 3 multiples of 6 are 6, 12 and 18.

(b) Factors

(i) Consider the following expression.

$8 \div 2 = 4$

4 is an **integer**. Remainder is 0.

$\therefore$ 8 is divisible by 2.

(ii) Consider the following expression.

$12 \div 3 = 4$ ◄ 12 is divisible by 3.

$\therefore$ 3 is a **factor** of 12.

e.g. $12 = 1 \times 12$
$= 2 \times 6$
$= 3 \times 4$

$\therefore$ Factors of 12 are 1, 2, 3, 4, 6 and 12.

(c) Prime Numbers and Composite Numbers

(i) Numbers having only two factors (1 and itself) are called **prime numbers**.
e.g. Prime numbers up to 20 are 2, 3, 5, 7, 11, 13, 17 and 19.

(ii) Numbers having 3 or more factors (including 1) are called **composite numbers**.
e.g. Composite numbers up to 10 are 4, 6, 8, 9 and 10.

Number	*Factor*	*Prime Numbers*	*Composite Numbers*
1	1	✗	✗
2	1, 2	✓	✗
3	1, 3	✓	✗
4	1, 2, 4	✗	✓
5	1, 5	✓	✗
6	1, 2, 3, 6	✗	✓

(d) Lowest Common Multiple (L.C.M.)

Multiples of 6 are 6, 12, (18), 24, 30, (36), ⋯

Multiples of 9 are 9, (18), 27, (36), 45, ⋯

The circled numbers 18 and 36 are called the **common multiples** of 6 and 9.
The smallest common multiple is called the **lowest common multiple** (abbreviated as L.C.M.).

∴ The L.C.M. of 6 and 9 is 18.

(e) Highest Common Factor (H.C.F.)

Factors of 18 are (1), (2), (3), (6), 9, 18

Factors of 24 are (1), (2), (3), 4, (6), 8, 12, 24

The circled numbers 1, 2, 3 and 6 are called the **common factors** of 18 and 24.
The largest common factor is called the **highest common factor** (abbreviated as H.C.F.).

∴ The H.C.F. of 18 and 24 is 6.

Example 3 Write down the factors of 12 and 32. Hence, find the H.C.F. of 12 and 32.

Solution Factors of 12 are 1, 2, 3, 4, 6 and 12.
Factors of 32 are 1, 2, 4, 8, 16 and 32.

∴ The H.C.F. of 12 and 32 is 4.

Example 4 Write down the first 5 multiples of 16 and 20. Hence, find the L.C.M. of 16 and 20.

Solution The first 5 multiples of 16 are 16, 32, 48, 64 and 80.

The first 5 multiples of 20 are 20, 40, 60, 80 and 100.

∴ The L.C.M. of 16 and 20 is 80.

Let's Try 1.2

1. Write down the factors of 14 and 35. Hence, find the H.C.F. of 14 and 35.

   Solution Factors of 14 are ______, ______, ______, ______.

   Factors of 35 are ______, ______, ______, ______.

   ∴ The H.C.F. of 14 and 35 is ______.

2. Write down the first 5 multiples of 8 and 10. Hence, find the L.C.M. of 8 and 10.

   Solution The first 5 multiples of 8 are ____________.

   The first 5 multiples of 10 are ____________.

   ∴ The L.C.M. of 8 and 10 is ______.

3. Write down all the prime numbers from 20 to 30.

   Solution The prime numbers from 20 to 30 are ______, ______.

1.3 Fractions

(a) Types of Fractions

fraction bar → $\frac{3}{5}$ ← numerator / ← denominator

The following are 3 common types of fractions:

Type	*Meaning*	*Example*
Proper fraction	a fraction with a numerator less than the denominator	$\frac{1}{4}, \frac{2}{7}, \frac{8}{15}$
Improper fraction	a fraction with a numerator greater than or equal to the denominator	$\frac{7}{7}, \frac{11}{6}, \frac{10}{4}$
Mixed fraction	a sum of a natural number and a proper fraction	$1\frac{2}{7}, 3\frac{1}{5}, 12\frac{3}{8}$

Note: In a fraction, if the numerator, denominator or both contain a fraction, the fraction is called a **complex fraction**.

$\dfrac{\frac{3}{5}}{\frac{9}{10}}$ is a complex fraction and $\dfrac{\frac{3}{5}}{\frac{9}{10}} = \frac{3}{5} \div \frac{9}{10}$

(b) Operations with Fractions

(i) Addition or subtraction:

Expand the fractions to make their denominators the same first, then add or subtract the numerators.

Example 5 Calculate $\frac{1}{2} - \frac{2}{7}$.

Solution

$$\frac{1}{2} - \frac{2}{7}$$
$$= \frac{7-4}{14}$$
$$= \underline{\underline{\frac{3}{14}}}$$

The L.C.M. of 2 and 7 is 14.

$\therefore \frac{1}{2} = \frac{1 \times 7}{2 \times 7} = \frac{7}{14}$

$\frac{2}{7} = \frac{2 \times 2}{7 \times 2} = \frac{4}{14}$

(ii) Multiplication or division:

Convert all mixed fractions into improper fractions first, then cancel out all the common factors in the numerators and the denominators.

Example 6 Calculate the following.

(a) $\dfrac{\frac{2}{3}}{\frac{4}{9}}$

(b) $\frac{1}{6} \times \frac{3}{4} + \frac{5}{6} \div 1\frac{1}{3}$

Solution **(a)**

$$\dfrac{\frac{2}{3}}{\frac{4}{9}}$$
$$= \frac{2}{3} \div \frac{4}{9}$$
$$= \frac{2}{3} \times \frac{9}{4}$$
$$= \frac{3}{2}$$
$$= \underline{\underline{1\frac{1}{2}}}$$

To divide a fraction by another, turn the divisor upside down and convert '÷' into '×'.

(b) $\frac{1}{6} \times \frac{3}{4} + \frac{5}{6} \div 1\frac{1}{3}$

$= \frac{1}{6} \times \frac{3}{4} + \frac{5}{6} \div \frac{4}{3}$

Convert into improper fraction first.

$= \frac{1}{6} \times \frac{3}{4} + \frac{5}{6} \times \frac{3}{4}$

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

$= \frac{6}{8}$

$= \underline{\underline{\frac{3}{4}}}$

Simplify the answer. $\frac{\not{6}^{3}}{\not{8}_{4}}$

Let's Try 1.3

Calculate the following.

1. $\frac{4}{9} + \frac{5}{12}$

$= \frac{\square}{\square}$

$=$

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

$=$

3. $2\frac{5}{8} \times 1\frac{2}{7}$

$=$

4. $\frac{\frac{2}{5}}{\frac{14}{45}} = \frac{2}{5} \div \square$

$=$

5. $1 - 1\frac{1}{5} \div 12$

$= 1 - \square \times \square$

$= 1 - \square$

$=$

6. $\frac{7}{9} \times 3 + 3\frac{1}{2} \div 14$

$= \frac{7}{9} \times 3 + \square \times \square$

$= \square + \square$

$=$

Exercise 1

Calculate the following. **[Nos. 1–8]**

1. $15 \times 5 \div 3$

$=$

2. $2.5 - 1.4 + 3 \times 0.3$

$=$

3. $50 - 9.2 \times 5 + 13$

$=$

4. $(5.2 + 4.3) \div 5$

$=$

5. $\dfrac{\frac{3}{7}}{\frac{5}{21}}$

$=$

6. $\left(2\frac{1}{2} - 3 \times \frac{2}{3}\right) \div \frac{1}{2}$

$=$

7. $\left(8\frac{2}{7} - 4\frac{1}{5} \times \frac{10}{7}\right) \div \frac{7}{12}$

$=$

8. $3\frac{1}{2} \times \left(2\frac{1}{2} + \frac{5}{6}\right) \div \left(\frac{1}{6} \times \frac{1}{3}\right)$

$=$

9. Write down the factors of 15 and 30. Hence, find the H.C.F. of 15 and 30.

Solution Factors of 15 are ________, ________, ________, ________.

Factors of 30 are ________, ________, ________, ________,

________, ________, ________, ________.

$\therefore$ The H.C.F. of 15 and 30 is ________.

10. Write down the first 8 multiples of 12 and 28. Hence, find the L.C.M. of 12 and 28.

Solution The first 8 multiples of 12 are ____________________.

The first 8 multiples of 28 are ____________________.

$\therefore$ The L.C.M. of 12 and 28 is ________.

11. Write down all the composite numbers from 31 to 59.

Solution Composite numbers from 31 to 59 are ____________________

____________________.

Fill in the $\square$ with '+', '−', '×' or '÷' to make the both sides of the following expressions equal. **[Nos. 12–13]**

12. $\frac{1}{11} \square 8 \square \frac{10}{11} \times \frac{1}{8} = \frac{1}{8}$

13. $\left(\frac{1}{2} \square \frac{1}{3} + \frac{1}{6}\right) \square 36 = 12$

14. Taxi Fare Table

First 2 km	\$22.00
Every subsequent 0.2 km	\$1.60
Every piece of baggage	\$5.00

City A and city B are 4 km apart. City B and city C are 13.2 km apart. Paco took a taxi from A to C via B without any baggage. How much taxi fare should he pay?

NAME ______________________ CLASS ____________ DATE ____________

Basic Skills Practice

Using Ratios and Rates, Part 1

A ratio is a comparison of two numbers or quantities. Ratios may be written three different ways:

$\frac{2}{7}$ 2 to 7 2 : 7

Ratios can be used to make predictions.

Example 1: Arthur makes 2 goals for every 7 attempts. Predict how many goals will he make in 35 attempts.

Compare: $\frac{\text{goals}}{\text{attempts}} = \frac{2}{7}$

Make equivalent ratios. (Making equivalent ratios is like making equivalent fractions.)

Goals	2	4	6	8	10
Attempts	7	14	21	28	35

We can expect Arthur to make 10 goals in 35 attempts.

Ratios can be used to determine how many times greater one number is than another.

Example 2: Richard is 16 years old. Martha is 4 years old. How many times older is Richard than Martha?

Compare: $\frac{\text{Richard's age}}{\text{Martha's age}} = \frac{16}{4}$ Divide: $\frac{16}{4} = 4$

Richard is 4 times older than Martha.

Ratios can be used to compare amounts when the units of measure are the same.

Example 3: A punch recipe uses 4 cups of water and 16 ounces of orange concentrate. What is the ratio of water to concentrate?

Make sure the units are the same. Change 16 ounces to 2 cups.

Compare: $\frac{\text{water}}{\text{concentrate}} = \frac{4\text{ cups}}{2\text{ cups}} = \frac{2\text{ cups}}{1\text{ cup}}$

The ratio of water to concentrate is 2 cups of water to 1 cup of concentrate.

A ratio that compares two different kinds of quantities is called a rate.

Examples of rates: $\frac{\text{miles}}{\text{hour}}, \frac{\text{miles}}{\text{gallon}}$

When the rate has a denominator of 1, it is called a unit rate.

Example 4: A car travels 300 miles on 12 gallons of gasoline. What is the unit rate in miles per gallon (mpg)?

A unit rate compares a quantity to a unit of one.

Compare: $\frac{\text{miles}}{\text{gallons}} = \frac{300}{12} = 25\text{ mpg}$

Write three equivalent ratios for each given ratio.

1. $\frac{5}{6}$ ______________________

2. $\frac{2}{3}$ ______________________

Write a ratio that compares each quantity.

3. the number of vowels to the number of consonants in the alphabet ____________

4. the number of months that end in *y* to the total number of months in a year ________

NAME ______________________ CLASS __________ DATE __________

Basic Skills Practice

Using Proportions, Part 1

A proportion is an equation stating that two ratios are equal.

1:2 and 4:8 form the proportion $\frac{1}{2} = \frac{4}{8}$

Cross products can be used to tell if two ratios form a proportion.

$\frac{1}{2} = \frac{4}{8}$ $2 \times 4 = 8$ $1 \times 8 = 8$ *Yes* $\frac{1}{3} = \frac{4}{5}$ $3 \times 4 = 12$ $1 \times 5 = 5$ *No*

Cross products can be used to find the missing term in a proportion. $\frac{18}{n} = \frac{6}{3}$

Example 1: Find the value of n in $\frac{18}{n} = \frac{6}{3}$.

Use cross products: $6 \times n = 18 \times 3$

$6n = 54$

$n = 9$

Proportions can help solve problems.

Example 2: What is the cost of a dozen oranges if 3 oranges cost 99 cents?

$\frac{3}{99} = \frac{12}{n}$

$3n = 1188$

$n = 396$

12 oranges cost 396 cents or $3.96

Does each pair of ratios form a proportion? Write *yes* or *no*.

1. $\frac{3}{9}, \frac{6}{18}$ ______

2. $\frac{9}{10}, \frac{18}{30}$ ______

3. $\frac{1}{2}, \frac{50}{100}$ ______

4. $\frac{10}{20}, \frac{30}{40}$ ______

5. $\frac{55}{121}, \frac{5}{11}$ ______

6. $\frac{0.4}{2.3}, \frac{1.6}{9.2}$ ______

Solve each equation for *n*.

7. $\frac{48}{n} = \frac{4}{7}$ ______

8. $\frac{9}{24} = \frac{n}{48}$ ______

9. $\frac{4}{18} = \frac{6}{n}$ ______

10. $\frac{n}{55} = \frac{18}{22}$ ______

11. $\frac{5.1}{n} = \frac{1.7}{2}$ ______

12. $\frac{16}{34} = \frac{n}{1.7}$ ______

Solve by using a proportion.

13. Joe's favorite flavor of frozen yogurt is chocolate fudge. There are 65 calories in 2 ounces of chocolate fudge frozen yogurt. How many calories are there in 10 ounces? ______

14. One roll of gift wrap will wrap 4 shirt boxes. How many rolls will be needed to wrap 24 shirt boxes? ______

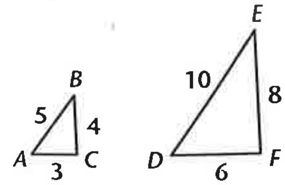
15. Elissa drives 164 miles in 4 hours. At that rate, how many miles will she travel in 6.5 hours? ______

NAME ______________________ CLASS ____________ DATE ____________

Basic Skills Practice

Similar Figures, Part 1

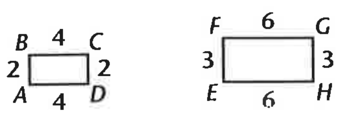
Two or more figures that have the same shape but different sizes are called *similar figures.* Triangle *ABC* and triangle *DEF* are similar figures.
This is written as $\triangle ABC \sim \triangle DEF$.



When two figures are similar,

- the corresponding angles are congruent.
  $\angle A \cong \angle D \quad \angle B \cong \angle E \quad \angle C \cong \angle F$
- the ratios of the lengths of the corresponding sides are equal.
  $\frac{AB}{DE} = \frac{5}{10} = \frac{1}{2} \quad \frac{BC}{EF} = \frac{4}{8} = \frac{1}{2} \quad \frac{AC}{DF} = \frac{3}{6} = \frac{1}{2}$

You can determine if two figures are similar by checking to see that they meet both conditions.
Example 1: Are rectangle *ABCD* and rectangle *EFGH* similar?



- Because both figures are rectangles, all angles are right angles, so they are all congruent.
- $\frac{AB}{EF} = \frac{2}{3} \quad \frac{BC}{FG} = \frac{4}{6} = \frac{2}{3} \quad \frac{CD}{GH} = \frac{2}{3} \quad \frac{DA}{HE} = \frac{4}{6} = \frac{2}{3}$

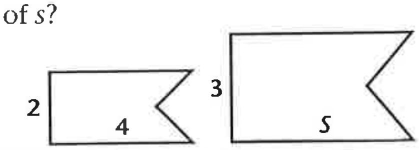
The ratios of the corresponding sides are equal, so rectangle *ABCD* ~ rectangle *EFGH*.

You can find the length of the missing side in similar figures by using proportions.
Example 2: The two flags are similar. What is the length of *s*?

Write a proportion. → $\frac{2}{3} = \frac{4}{s}$

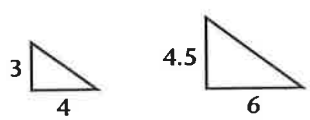
Solve the proportion. → $2s = 12$

$s = 6$



Determine if the pairs of figures are similar. Write *yes* or *no* in the blank spaces.

1.



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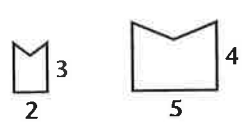
2.



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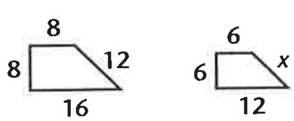
Each pair of figures is similar. Find the length of the missing side.

3.



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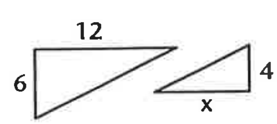
4.



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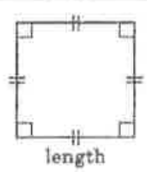
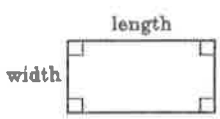
6 Perimeter, Area and Volume

Key Terms

length	filling method
width/breadth	capacity
base	container
height	dimensions
upper base	depth
lower base	maximum
splitting method	

6.1 Perimeters of Simple Plane Figures

(a) Perimeter of a plane figure = sum of the **lengths** of all its sides

Plane figure	*Perimeter*
	Perimeter of a square = length × 4
	Perimeter of a rectangle = (length + **width**) × 2

(b) mm, cm, m and km are common measuring units of lengths.

Example 1 The figure shows a rectangle formed by 3 squares with side 8 cm. Find the perimeter of the rectangle.

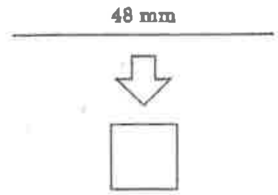
Solution Length of the rectangle = 8 × 3

= 24 (cm)

∴ Perimeter of the rectangle = (24 + 8) × 2

= <u>64 (cm)</u>

Example 2 Andy uses a wire of 48 mm long to form a square. Find the length of the square.



Solution Let x mm be the length of the square.

$$4x = 48$$

$$\frac{4x}{4} = \frac{48}{4}$$

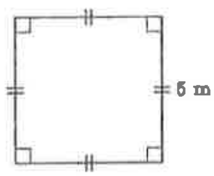
$$x = 12$$

∴ The length of the square is 12 mm.

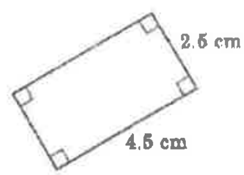
Let's Try 6.1

Find the perimeters of the following figures. **[Nos. 1–4]**

1.



2.



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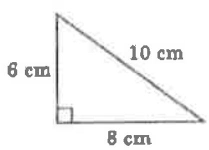
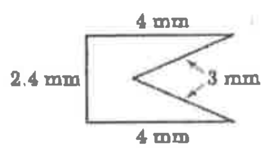


4.



5. The perimeter of a rectangle is 110 cm. If the length is 42 cm, find the width.

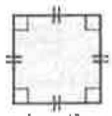
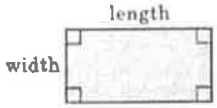
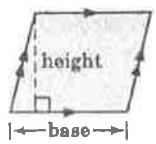
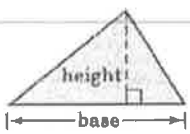
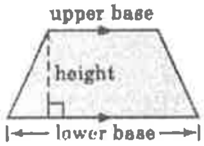
Solution Let y cm be the width.

(____ + ____) × ____ = ____

∴ The width is ____ cm.

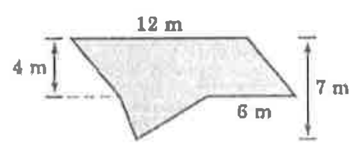
6.2 Areas of Simple Plane Figures

(a)

Plane figure	*Area*
	Area of a square = length $\times$ length
	Area of a rectangle = length $\times$ width
	Area of a parallelogram = **base** $\times$ **height**
	Area of a triangle = $\frac{1}{2}$ $\times$ base $\times$ height
	Area of a trapezium = $\frac{1}{2}$ $\times$ (upper base + lower base) $\times$ height

(b) mm^2, cm^2, m^2 and km^2 are common measuring units of areas.

Example 3 The polygon on the right is formed by a parallelogram and a triangle. Find the area of the polygon.



Solution

Area of the parallelogram = 12×4
$= 48\ (m^2)$

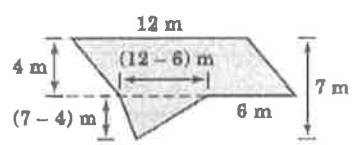
Area of the triangle

$= \frac{1}{2} \times (12 - 6) \times (7 - 4)$

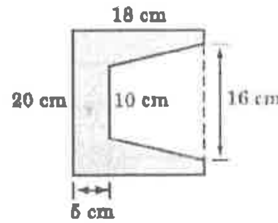
$= \frac{1}{2} \times 6 \times 3$

$= 9\ (m^2)$

$\therefore$ Area of the polygon = $48 + 9 = \underline{57\ (m^2)}$



Example 4 In the figure, John cuts out a trapezium from a piece of rectangular paper. What is the area of the remaining part?



Solution

Area of the rectangle $= 20 \times 18$

$= 360\ (\text{cm}^2)$

Area of the trapezium $= \frac{1}{2} \times (10 + 16) \times (18 - 5)$

$= \frac{1}{2} \times 26 \times 13$

$= 169\ (\text{cm}^2)$

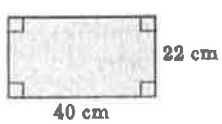
$\therefore$ Area of the remaining part $= 360 - 169$

$= \underline{\underline{191\ (\text{cm}^2)}}$

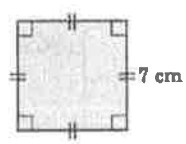
Let's Try 6.2

Find the areas of the following figures.

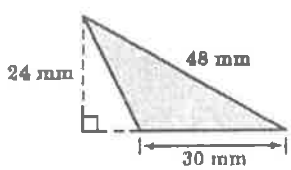
1.



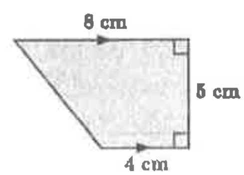
2.



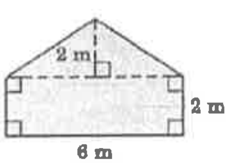
3.



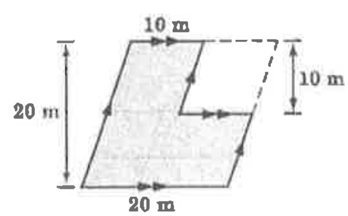
4.



5.

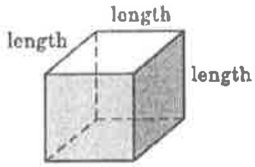
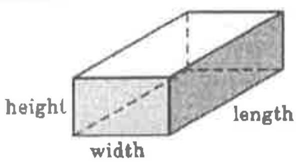


6.

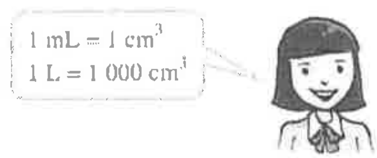


6.3 Volumes of Simple Solid Figures

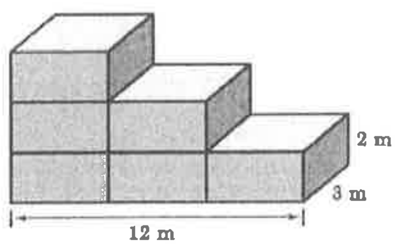
(a)

Solid figure	*Volume*
	Volume of a cube = length × length × length
	Volume of a cuboid = length × width × height

(b) mm^3, cm^3, m^3 and km^3 are common measuring units of volumes. For the **capacity** of a **container** or volume of liquid, the units mL and L can also be used.



Example 5 The solid below is formed by 6 cuboids of the same size. Find the volume of the solid.



Solution Length of each cuboid = 12 ÷ 3

= 4 (m)

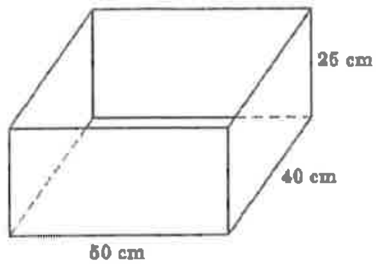
Volume of each cuboid = 4 × 3 × 2

= 24 (m^3)

∴ Volume of the solid = 24 × 6

= 144 (m^3)

Example 6 The **dimensions** of the container below are 50 cm × 40 cm × 25 cm. If Dick pours 30 L of water into the container, find the **depth** of water in the container.



Solution Let d cm be the depth of water in the container.

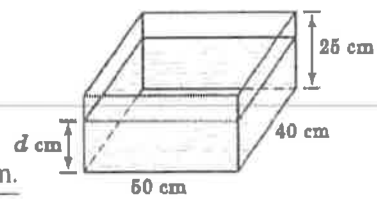
$$50 \times 40 \times d = 30 \times 1\ 000 \quad \blacktriangleleft\ 30\text{ L} = 30 \times 1\ 000\text{ cm}^3$$

$$2\ 000d = 30\ 000$$

$$\frac{2\ 000d}{2\ 000} = \frac{30\ 000}{2\ 000}$$

$$d = 15$$

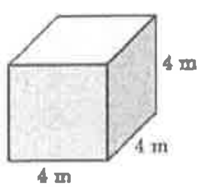
∴ The depth of water in the container is 15 cm.



Let's Try 6.3

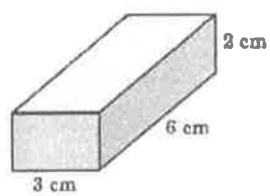
Find the volumes of the following solids. **[Nos. 1–2]**

1.



____

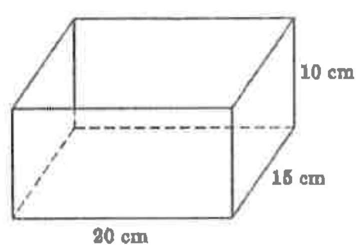
2.



____

3. **(a)** In the figure, the capacity of the container is ________ L.

(b) Pansy pours a bottle of 1.5 L orange juice into the container. The depth of orange juice in the container is ________ cm.

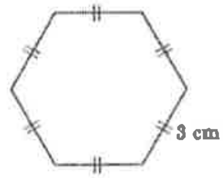


Exercise 6

Find the perimeters of the following figures. **[Nos. 1–2]**

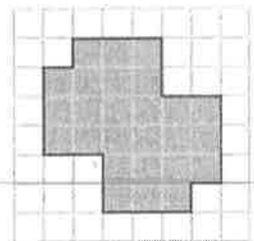
1.

2.



______________ ______________

3. In the figure, the length of each small square is 1 cm.

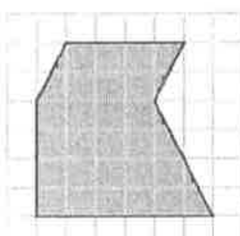


(a) Perimeter of the shaded region is ______________ cm.

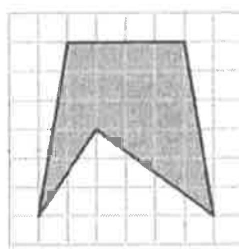
(b) Area of the shaded region is ______________ cm^2.

In the following figures, the length of each small square is 1 cm. Find the areas of the shaded regions. **[Nos. 4–5]**

4.

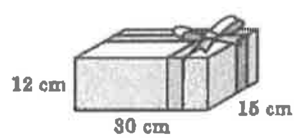


5.

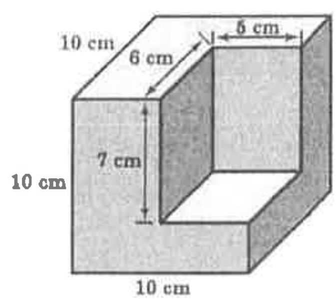


______________ ______________

6. The volume of the gift box on the right is ______________ cm^3.



7. The figure shows the remaining part of a cube after a cuboid is cut out. The volume of this remaining part is ______________ cm^3.

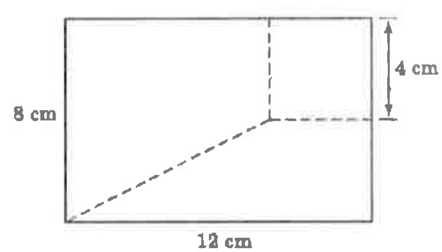


8. David gives a box of candies to Mandy. The box is a cuboid with length 10 cm, width 6 cm and volume 180 cm^3. Find the height of the box.

9. A fence of 200 m is built around a rectangular garden. If the length of the garden is 60 m, find the area of the garden.

10. Jack uses a piece of wire to form an equilateral triangle of side 14 cm. Then, Michelle reforms it to a square. What is the area of the square?

11. The figure shows a rectangle with length 12 cm and width 8 cm. It is cut into one square and two trapeziums of different sizes. If the side of the square is 4 cm, what is the area of the smaller trapezium?



12. There is a box with length 20 cm, width 12 cm and height 10 cm. Find the **maximum** number of blocks as shown on the right can be put into the box.