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Mathematics

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Grade

6

Revision
Guide



Smart Gundumuro
Mary Dube
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New Curriculum
With
Answers

Plus One | Serious Revision

Mathematics

Grade 6 Revision Guide

(with answers)

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UNIT 1: WHOLE NUMBERS

Unit objectives

You should be able to:

- identify, read and write numbers in words and numerals up to 1 000 000.
- give value of digits in numbers.
- write numbers in expanded notation.
- arrange numbers in order of size.
- identify prime numbers in the range 0 to 50.

General hints on whole numbers

At Grade Six level, the number range is 0 up to 1 000 000. You need to know and understand all the whole numbers in this range. You need to gain understanding of even numbers, odd numbers as well as prime numbers. You also need to be able to count on or backwards using given intervals.

To be a master of numbers at this level, you must be able to read and write numbers in the range of zero to one million (0 - 1 000 000) both in figures and in words. To be able to give values of digits in a number, you need to master the use of an abacus. Remember correct placement of digits on an abacus is important.

The first thing that you need to understand when asked to read or write a number is the abacus. Below is an illustration of the abacus that you need to master.

(a) 670 292 can be shown on an abacus as illustrated below:

HTH	TTH	TH	H	T	U
***	****		**	****	**
**	***			***	
				*	

It reads: Six hundred and seventy thousand, two hundred and ninety-two.

Ordering numbers

Numbers can be arranged in order of size. The arrangement can be in ascending or descending order depending on the demands of the question. When you are asked to arrange in ascending order, remember to always begin with the smallest. On the contrary, when you are asked to arrange in descending order you begin with the largest.

Example

Arrange the following numbers in ascending order

234; 264; 243; 634; 543; 143; 343

Answer

143; 234; 264; 343; 543; 634

Practice Exercise 5

1. Arrange the following numbers in ascending order.
 - (a) 7 234; 5 234; 8 234; 5 234; 6 234; 2 234; 9 234
 - (b) 200 000; 800 000; 400 000; 600 000; 900 000; 500 000
 - (c) 7 234 000; 5 234 000; 8 234 000; 6 234 000; 4 234 000
 - (d) 600 000; 700 000; 200 000; 500 000; 900 000; 800 000
 - (e) 499 999; 299 999; 899 999; 199 999; 799 999
2. Arrange the following numbers in descending order.
 - (a) 456; 656; 256; 856; 956; 556
 - (b) 502 783; 453 689; 753 986; 633 465
 - (c) 815 000; 814 000; 915 000; 715 000; 415 000
 - (d) 262; 97; 1 212; 40 112; 62 123; 112 800
 - (e) 2 000; 100; 900 000; 90 000; 1 000

Prime numbers

A prime number is a number which has only two factors which are one and itself. 1 is not a prime number since it does not have any other factor other than itself.

Practice Exercise 6

Identify all the prime numbers from 0 to 50. How many are they? They are supposed to be 15.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Estimating and approximating

When rounding off numbers to the nearest a given value, you consider a digit to the immediate right of the value. If the digit to the right of the value is below 5, that is 4; 3; 2; 1, you round down. If the digit to the right of the value is between 5 and 9, you round up the value.

Example

- (i) 34 to the nearest 10 is 30 because 4 is below 5, so we round down.
- (ii) 37 to the nearest 10 is 40 because 7 is above 5, so we round up.

Practice Exercise 7

1. Round off the following to the nearest ten.
 - (a) 65 to the nearest 10 is ☐
 - (b) 13 to the nearest 10 is ☐
 - (c) 58 to the nearest 10 is ☐
 - (d) 139 to the nearest 10 is ☐
 - (e) 253 to the nearest 10 is ☐
2. Round off the following to the nearest hundred.
 - (a) 234 to the nearest 100 is ☐
 - (b) 661 to the nearest 100 is ☐
 - (c) 913 to the nearest 100 is ☐
 - (d) 79 to the nearest 100 is ☐
 - (e) 780 to the nearest 100 is ☐
3. Round off the following to the nearest thousand.
 - (a) 1639 to the nearest 1 000 is ☐
 - (b) 4 312 to the nearest 1 000 is ☐
 - (c) 953 to the nearest 1 000 is ☐
 - (d) 9 210 to the nearest 1 000 is ☐
 - (e) 15 815 to the nearest 1 000 is ☐
4. Round off the following to the nearest ten thousand.
 - (a) 12 723 to the nearest 10 000 is ☐
 - (b) 49 670 to the nearest 10 000 is ☐
 - (c) 57 123 to the nearest 10 000 is ☐
 - (d) 126 690 to the nearest 10 000 is ☐
 - (e) 99 300 to the nearest 10 000 is ☐
5. Round off the following to the nearest hundred thousand.
 - (a) 99 562 to the nearest 100 000 is ☐
 - (b) 913 548 to the nearest 100 000 is ☐
 - (c) 612 899 to the nearest 100 000 is ☐
 - (d) 580 100 to the nearest 100 000 is ☐
 - (e) 734 789 to the nearest 100 000 is ☐

UNIT 2: PROPER FRACTIONS

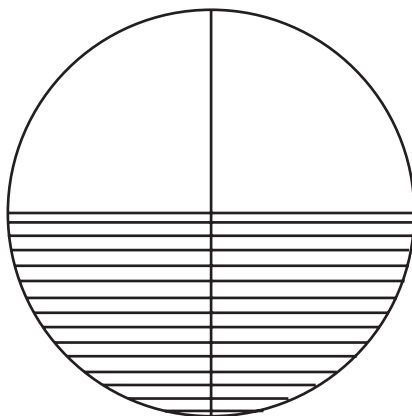
Objectives

You should be able to:

- (a) identify, read and write fractions with denominators 2 to 10 and multiples of 5 up to 100.
- (b) give equivalent fractions.
- (c) compare fractions and arrange them in order of size.

What is a fraction?

A fraction is a part of a whole. In a fraction, remember that the top number is the **numerator** while the bottom number is called the **denominator**. In this unit, you are going to consolidate work you covered concerning proper fractions.



The shape has been divided into four parts. The shaded fraction is $\frac{2}{4} = \frac{1}{2}$.

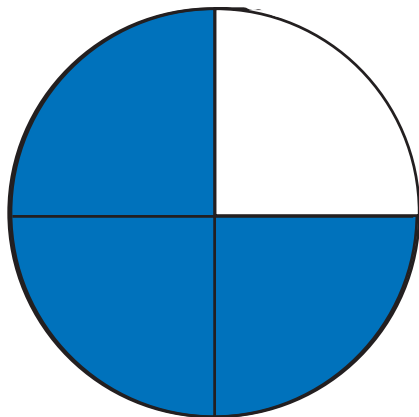
The unshaded part is also $\frac{2}{4} = \frac{1}{2}$.

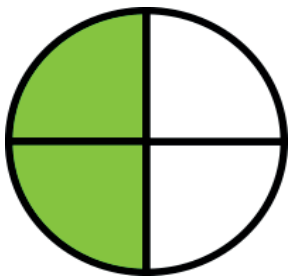
The 2 on the top is the numerator while the 4 on the bottom is the denominator.

Practice Exercise 8

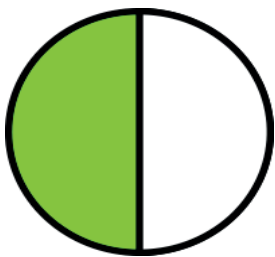
What fraction is shaded?

1.





This fraction is $\frac{2}{4}$



This fraction is $\frac{1}{2}$

Thus $\frac{2}{4}$ is equivalent to $\frac{1}{2}$ It can be written as $\frac{2}{4} = \frac{1}{2}$

To find equivalent fractions, you either multiply both the numerator and the denominator with the same multiplier or divide both the numerator and the denominator with the same divisor.

Example

- What fractions are equivalent to $\frac{1}{2}$?

Solution

$$1. \quad \frac{1}{2} \times \frac{2}{2} = \frac{2}{4} \times \frac{2}{2} = \frac{4}{8} \text{ Thus } \frac{1}{2} = \frac{2}{4} = \frac{4}{8}$$

Practice Exercise 10

Find fractions equivalent to the following:

(a) $\frac{4}{5} = \frac{\quad}{10}$

(b) $\frac{25}{50} = \frac{50}{\quad}$

(c) $\frac{15}{45} = \frac{30}{\quad}$

(d) $\frac{6}{20} = \frac{\quad}{10}$

(e) $\frac{60}{80} = \frac{6}{\quad}$

Comparing fractions

Fractions can be compared to find which one is smaller or greater. This can only be possible when they have the same denominator.

Examples

$$1. \quad \frac{6}{10} \square \frac{5}{10}$$

$$2. \quad \frac{5}{8} \square \frac{7}{8}$$

Answers

$$1. \quad \frac{6}{10} > \frac{5}{10}$$

$$2. \quad \frac{5}{8} < \frac{7}{8}$$

(c) $5\frac{2}{3}$

(d) $4\frac{5}{8}$

(e) $2\frac{4}{10}$

2. Convert the following improper fractions to mixed numbers.

(a) $\frac{9}{4}$

(b) $\frac{15}{7}$

(c) $\frac{25}{4}$

(d) $\frac{53}{5}$

(e) $\frac{84}{5}$

UNIT 4: DECIMAL NUMBERS

Objectives

You should be able to:

- identify, read and write decimal numbers.
- find the value of digits in decimal numbers.
- compare decimal numbers.
- arrange decimal numbers in order of size.
- round off decimal numbers to a degree of accuracy.

A decimal number is a number whose whole number part and the fraction part is separated by a decimal point.

Reading decimals

Examples

1. $\frac{1}{10} = 0.1$ (one tenth = zero comma one). It has one decimal place.
2. $\frac{5}{100} = 0.05$ (five hundredths = zero comma zero five). It has two decimal places.

Practice Exercise 15

1. Write the following decimals in words.
 - (a) 0.5
 - (b) 0.15
 - (c) 0.95
 - (d) 0.125
 - (e) 0.025
2. Write the following as numerals.

2. 25.45 75.25 63.45 83.54 32.45 93.45

Answers

1. 0.65 0.75 0.8 0.85 0.9 0.95
 2. 25.45 32.45 63.45 75.25 83.54 93.45

Practice Exercise 18

1. Arrange these decimal numbers in ascending order.

(a) 0.9	0.3	0.7	0.2	0.6	0.8	0.5
(b) 0.45	0.56	0.95	0.75	0.25	0.55	0.85
(c) 85.32	75.23	65.25	25.65	32.54	95.32	15.65
(d) 546.125	124.364	746.364	646.364	824.364	446.364	
(e) 873.25	573.75	773.75	973.75	873.75	673.75	

2. Arrange these decimal numbers in descending order.

(a) 0.81	0.61	0.51	0.41	0.71	0.31
(b) 21.5	41.4	61.5	81.5	71.5	91.5
(c) 60.21	70.31	90.21	80.82	60.99	40.98
(d) 0.254	2.541	21.345	25.987	345.98	0.789
(e) 845.231	385.254	698.213	875.254	546.258	

Rounding off decimal numbers

Examples

- Round off 6.325 to the nearest tenth.
- Round off 25.698 to the nearest hundredth.

Answers

- 6.325 to the nearest tenth is

U th hth tth
 6 3 2 5.

Identify the tenths first and then check the digit to the immediate right. In this case it is 2 which is below 5 so you round down. The answer becomes 6.3.

- 25.698 to the nearest hundredth.

T U tth hth tth
 2 5. 6 9 8

Identify the hundredths first and then check the digit to the immediate right. In this case, it is above 5 so you round up the digit on the hundredth column which in turn rounds up the tenth column. The answer becomes 25.70.

Answers

- $\frac{1}{4} \times 100\% = \frac{1}{4} \times \frac{100\%}{1} = \frac{100\%}{1} = 25\%$
- $\frac{2}{5} \times 100\% = \frac{2}{5} \times \frac{100\%}{1} = \frac{100\%}{1} = 40\%$

Practice Exercise 20

Express the following fractions as percentages.

- | | |
|---------------------|---------------------|
| (a) $\frac{1}{4}$ | (b) $\frac{3}{4}$ |
| (c) $\frac{27}{50}$ | (d) $\frac{6}{10}$ |
| (e) $\frac{8}{10}$ | (f) $\frac{5}{20}$ |
| (g) $\frac{15}{20}$ | (h) $\frac{4}{4}$ |
| (i) $\frac{23}{25}$ | (j) $\frac{34}{50}$ |

Expressing percentages as fractions

Remember percentage means a fraction of a hundred.

Examples

- 45% as a fraction.
- 75% as a fraction.

Answers

- 45% as a percentage = $\frac{45}{100} = \frac{45}{100} \div \frac{5}{5} = \frac{9}{20}$
- 75% as a percentage = $\frac{75}{100} = \frac{75}{100} \div \frac{25}{25} = \frac{3}{4}$

Practice Exercise 21

Express the following percentages as fraction in their lowest terms.

- | | | | | |
|---------|---------|---------|---------|---------|
| (a) 30% | (b) 65% | (c) 80% | (d) 35% | (e) 20% |
| (f) 70% | (g) 15% | (h) 10% | (i) 5% | (j) 7% |

Finding percentages of values

Examples

- 50% of 200
- 25% of 500 metres

Answers

- 50% of 200 = $\frac{50}{100} \times \frac{200}{1} = \frac{10\,000}{100} = 100$

UNIT 7: ADDITION AND SUBTRACTION OF WHOLE NUMBERS

Objectives

You should be able to:

- add whole numbers.
- apply associative and commutative laws to addition.
- subtract whole numbers in the range 1 to 1 000 000.

Addition of whole numbers

You have practiced addition of whole numbers in your previous grades. The process of addition is the same. You can use either the long or the short method.

Example

$$\begin{array}{r} 1. \quad 5\,231 \\ + 4\,341 \\ \hline \end{array}$$

Answers

Long method

$$\begin{array}{r} 5\,000 + 200 + 30 + 1 \\ + 4\,000 + 300 + 40 + 1 \\ \hline 9\,000 + 500 + 70 + 2 = 9\,572 \end{array}$$

Short method

$$\begin{array}{r} 5\,231 \\ + 4\,341 \\ \hline 9\,572 \end{array}$$

UNIT 8: ADDITION AND SUBTRACTION OF PROPER FRACTIONS

Objectives

You should be able to:

- add proper fractions.
- subtract proper fractions.
- add mixed numbers.
- subtract mixed numbers.
- subtract whole numbers in the range 1 to 1 000 000.
- demonstrate addition of fractions using the associative and commutative laws.

Addition of proper fractions

When adding fractions with the same denominator, we simply add the numerators and the denominator remains the same.

Examples

1. $\frac{2}{6} + \frac{3}{6} = \square$
2. $\frac{3}{5} + \frac{3}{10} = \square$

Answers

1. $\frac{2}{6} + \frac{3}{6} = \frac{(2+3)}{6} = \frac{5}{6}$
2. $\frac{3}{5} + \frac{3}{10} = (\frac{3 \times 2}{5 \times 2}) = \frac{6}{10} + \frac{3}{10} = \frac{9}{10}$

Practice Exercise 27

Simplify the following:

- | | | | |
|--|---|---|--|
| (a) $\frac{1}{5} + \frac{2}{5} = \square$ | (b) $\frac{3}{8} + \frac{2}{8} = \square$ | (c) $\frac{3}{10} + \frac{4}{10} = \square$ | (d) $\frac{1}{5} + \frac{2}{5} = \square$ |
| (e) $\frac{5}{25} + \frac{6}{25} = \square$ | (f) $\frac{3}{5} + \frac{4}{10} = \square$ | (g) $\frac{7}{15} + \frac{3}{5} = \square$ | (h) $\frac{11}{50} + \frac{3}{10} = \square$ |
| (i) $\frac{21}{40} + \frac{7}{20} = \square$ | (j) $\frac{2}{5} + \frac{12}{30} = \square$ | | |

Subtraction of proper fractions

Examples

1. $\frac{7}{10} - \frac{4}{10} = \square$

$$\begin{aligned}
2. \quad 3\frac{1}{4} - 1\frac{3}{10} &= \frac{13}{4} - \frac{13}{10} \\
&= \frac{13 \times 5}{4 \times 5} - \frac{13 \times 2}{10 \times 2} \\
&= \frac{65}{20} - \frac{26}{20} \\
&= \frac{40}{20} \\
&= 2
\end{aligned}$$

Practice Exercise 29

Simplify the following mixed numbers through addition and subtraction.

- (a) $2\frac{3}{5} + 1\frac{2}{5} = \square$ (b) $3\frac{3}{10} + 2\frac{2}{5} = \square$ (c) $4\frac{3}{5} + 3\frac{4}{20} = \square$ (d) $3\frac{1}{2} + 3\frac{2}{5} = \square$
(e) $1\frac{4}{5} + 2\frac{6}{25} = \square$ (f) $4\frac{3}{5} - 1\frac{4}{5} = \square$ (g) $3\frac{2}{5} - 2\frac{1}{2} = \square$ (h) $1\frac{11}{50} - \frac{3}{10} = \square$
(i) $2\frac{1}{4} - 1\frac{7}{20} = \square$ (j) $4\frac{2}{5} - 1\frac{1}{3} = \square$

UNIT 9: ADDITION AND SUBTRACTION OF DECIMALS

Objectives

You should be able to:

- add decimals.
- subtract decimals.

When carrying out addition or subtraction of decimals, it is very important to ensure that the commas are aligned properly.

Examples

1. **T U, t h**

$$\begin{array}{r}
65,72 \\
+ 24,14 \\
\hline
\end{array}$$
2. **H T U, t h th**

$$\begin{array}{r}
748,524 \\
- 439,214 \\
\hline
\end{array}$$

Answers

1. **T U, t h**

$$\begin{array}{r}
65,72 \\
+ 24,14 \\
\hline
89,86
\end{array}$$

Answers

$$\begin{array}{r} 1. \quad 6\,252 \\ \times \quad 5 \\ \hline 31\,260 \end{array}$$

$$\begin{array}{r} 2. \quad 4\,431 \\ \times \quad 70 \\ \hline 310\,170 \end{array}$$

Practice Exercise 31

Do the following:

$$\begin{array}{r} 1. \quad 6\,136 \\ \times \quad 3 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 2. \quad 4\,431 \\ \times \quad 5 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 3. \quad 3\,252 \\ \times \quad 8 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 4. \quad 2\,637 \\ \times \quad 6 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 5. \quad 2\,504 \\ \times \quad 9 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 6. \quad 4\,326 \\ \times \quad 40 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 7. \quad 3\,432 \\ \times \quad 60 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 8. \quad 7\,202 \\ \times \quad 40 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 9. \quad 9\,623 \\ \times \quad 53 \\ \hline \square\square\square\square \end{array}$$

$$\begin{array}{r} 10. \quad 4\,664 \\ \times \quad 81 \\ \hline \square\square\square\square \end{array}$$

Highest common factors (HCF) and Lowest common multiples (LCM)

A factor is a number which divides into another number without leaving a remainder. A highest common factor is the biggest number which divides into a number without leaving a remainder.

Examples

What are the factors of the following?

$$10 = 1; 2; 5 \text{ and } 10$$

$$16 = 1; 2; 4; 8 \text{ and } 16$$

Practice Exercise 32

Find the factors of the following:

(a) 6

(b) 24

(c) 36

(d) 45

(e) 64

Highest common factor (HCF)

The highest common factor can be calculated using prime numbers.

Example

What is the highest common factor of 12 and 20?

Answer

$$12 = 2 \times 2 \times 3$$

$$20 = 2 \times 2 \times 5$$

UNIT 17: RATE

Objectives

You should be able to:

- link two measures as rate.
- calculate speed, distance and time.

Rate

Two measures can be linked as rate. The following three statements define rate:

- (a) the speed at which something happens over a particular period of time.
- (b) the number of times something happens or is done during a particular period of time.
- (c) an amount that is paid: a price or amount to be paid that is set according to a scale or standard.

Examples

1. Delilah does 184 jumping jacks in 4 minutes. She does her jumping jacks at a constant rate. How many jumping jacks can Delilah do per minute?

Answers

Number of jumping jacks = 184

Time taken = 4 minutes

Therefore number of jacks per minute = $\frac{184 \text{ jacks}}{4 \text{ minutes}}$

= 46 jacks/minute

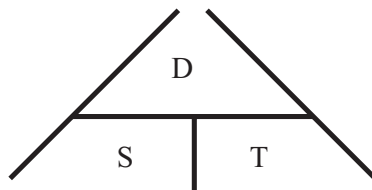
Practice Exercise 47

1. Lynette can wash 95 cars in 5 days. How many cars can Lynette wash in 11 days?
2. Miranda's Maid Service charges \$280 to clean 8 offices. What is the company's price for cleaning a single office?
3. Vivi is a drummer for a band. She burns 756 calories while drumming for 3 hours. If she burns the same number of calories each hour. How many calories does Vivi burn per hour?

Speed, distance and time

Working out speed, distance and time is an important part of many roles, including those in the armed forces or in transport industries. To work out speed, divide the distance of the journey by the time it took to travel, so speed = distance divided by time. To calculate time, divide distance by speed. To get the distance, multiply speed by time.

You may see these equations simplified as $s=d/t$, where s is speed, d is distance, and t is time.



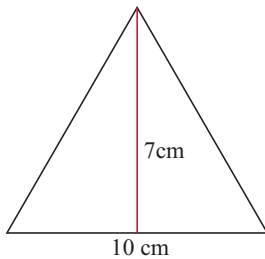
2. Calculate the area of the shapes with the following shapes:

- (a) rectangle measuring 9 cm by 5 cm.
- (b) square with sides measuring 7 cm.
- (c) square with sides measuring 11 cm.
- (d) rectangle measuring 11 cm by 13 cm.
- (e) rectangle measuring 6.5 cm by 13 cm.

Area of triangle

The formula for calculating the area of a triangle is $\frac{1}{2} \text{ base} \times \text{height}$.

Example

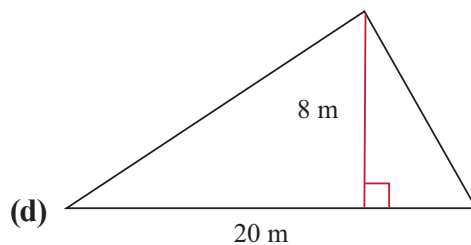
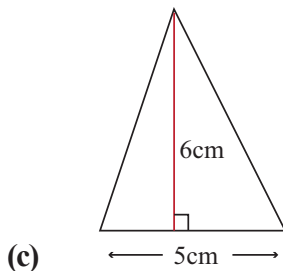
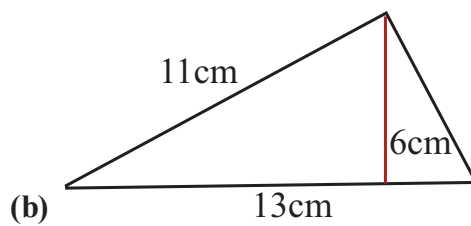
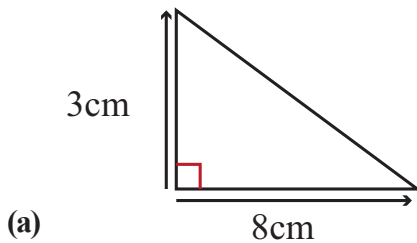


Answer

$$\begin{aligned}\text{Area of triangle} &= \frac{1}{2} \text{ base (b)} \times \text{height (h)} \\ &= \frac{1}{2} \times 10 \text{ cm} \times 7 \text{ cm} \\ &= 5 \text{ cm} \times 7 \text{ cm} \\ &= 35 \text{ cm}^2\end{aligned}$$

Practice Exercise 53

1. Calculate the area of the following triangles.



Practice Exercise 54

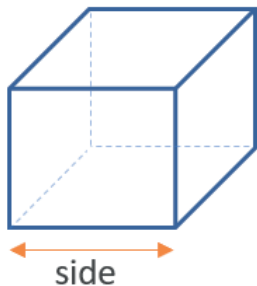
- Convert to litres.
(a) $5\text{ ml} = \square\text{ l}$
(b) $85\text{ ml} = \square\text{ l}$
(c) $300\text{ ml} = \square\text{ l}$
(d) $3\,985\text{ ml} = \square\text{ l}$
(e) $56\,652\text{ ml} = \square\text{ l}$
- Change to millilitres.
(a) $0.008\text{ l} = \square\text{ ml}$
(b) $0.065\text{ l} = \square\text{ ml}$
(c) $0.5\text{ l} = \square\text{ ml}$
(d) $7.985\text{ l} = \square\text{ ml}$
(e) $96.742\text{ l} = \square\text{ ml}$

Volume of cubes and rectangular prisms

The formula for finding the volume of cubes and rectangular prisms is as follow:

Volume = Length (L) \times Width (W) \times Height (H)

Example



Volume of a cube with sides lengths s $V = s \times s \times s = s^3$

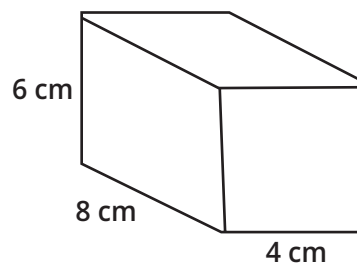
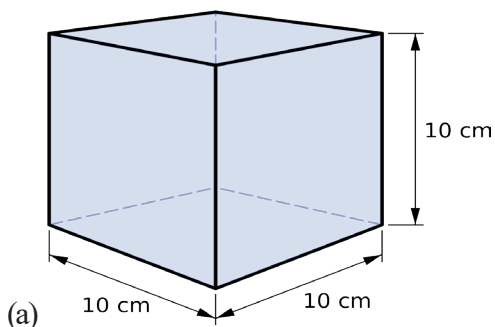
Let us say the sides of the cube are 6 cm each. Therefore, the volume will be $= s \times s \times s$

$$= 6\text{ cm} \times 6\text{ cm} \times 6\text{ cm}$$

$$= 216\text{ cm}^3$$

Practice Exercise 55

- Calculate the volume of the following shapes.

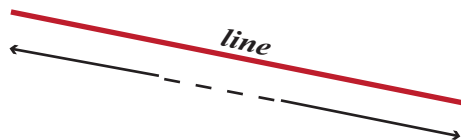


- (c) Name the town which is to the west of Masvingo?
- (d) Bulawayo is in which direction from Kwekwe?
- (e) Zvishavane is in which direction from Hwange?
- (f) Which town is south-east of Kwekwe?

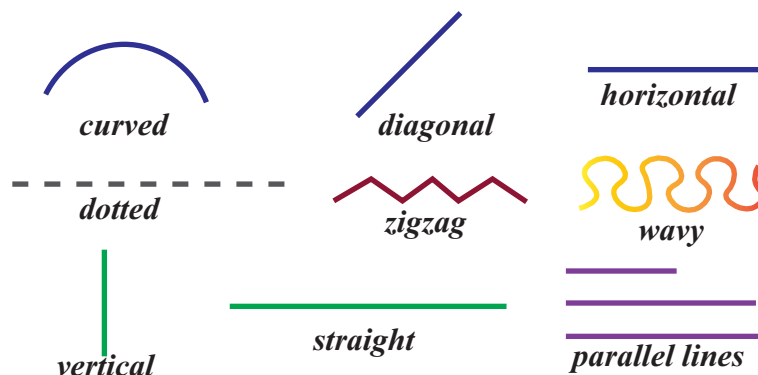


Lines

A line can be defined as a straight one-dimensional figure that has no thickness and extends endlessly in both directions. It is often described as the shortest distance between any two points.



There are many different kinds of lines as shown below:

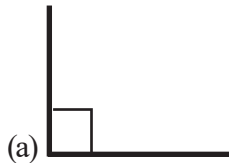


Practice Exercise 57

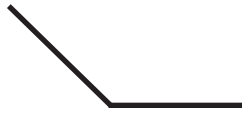
1. Draw the types of lines you have learnt about.
2. Suggest and write down 5 uses of lines.

Practice Exercise 59

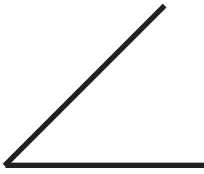
1. Write the name of each angle.



(b)



(c)



(d)



(e)

2. Draw and show the following angles:

(a) right angle

(b) obtuse angle

(c) acute angle

(d) reflex angle

(e) straight angle

UNIT 21: SHAPES

Objectives

You should be able to:

- draw and state the number of lines of symmetry for different shapes and letters of the alphabet.
- name lines and parts of a circle.

Plane shapes

A plane shape has two dimensions. Examples of plane shapes are rectangle, circle, square and triangle.

Can you draw these plane shapes.

Practice Exercise 60

Draw the following plane shapes and label them:

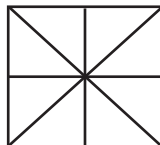
- (a) square
- (b) rectangle
- (c) triangle
- (d) hexagon
- (e) pentagon

Lines of symmetry

Lines of symmetry divide shapes and letters into two equal parts.

Example

Show the lines of symmetry in the following shape.



The square has 4 lines of symmetry.

ZIMBABWE GRADE SIX EXAMINATIONS

MATHEMATICS PAPER 1

702/1

SPECIMEN PAPER

Time: 2 hours

Time: 2 hours

INSTRUCTIONS TO CANDIDATES

1. Read **all** the instructions carefully.
2. **Do not** open this booklet until you are told to do so by the invigilator.
3. Use only an HB pencil for all entries on the answer sheet.
4. When you are told to start, choose **one** correct answer from the suggested answers and shade it **very dark** as shown in the examples at the top of the answer sheet.
5. If you wish to change your answer, **erase** it **completely** with a pencil rubber and then shade the new choice.
6. If **more** than **one** box is shaded for any one answer, that answer will be regarded as **wrong**.
7. **If you do not understand** the instructions, **ask** the invigilator to explain them to you **before you start**.
8. Answer **all** the questions on the separate answer sheet provided.
9. Rough paper will be provided.

This specimen paper consists of 9 printed pages and 3 blank pages.

[Turn over

ZIMBABWE GRADE SIX EXAMINATIONS

MATHEMATICS PAPER 2

702/2

SPECIMEN PAPER

Time: 2 hours

Candidates answer on the question paper.

Time: 2 hours

INSTRUCTIONS TO CANDIDATES

1. Write your name, centre number and candidate number on the spaces at the top of this page.
2. Answer **all** questions in **Section A** and any **three** questions in Section B.
3. If more than **three** questions are answered in **Section B**, the first three will be considered.
4. If working is needed for any question it must be shown in the space below that question.
5. Omission of essential working may result in loss of marks.
6. Answers must be written in the spaces indicated below each question.
7. Do **not** measure from given diagrams.
8. Electronic calculators and slide rules **must not** be used in the examination.

This specimen paper consists of 7 printed pages and 1 blank page.

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GRADE 6 EXAMINATION PRACTICE 1

MATHEMATICS

702/1

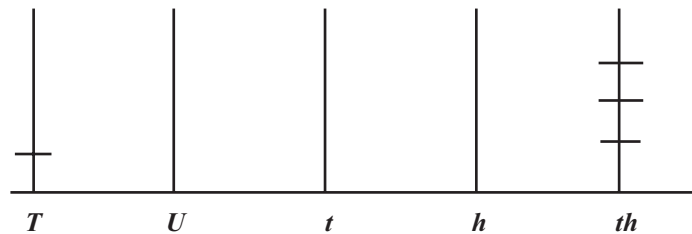
PAPER 1

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

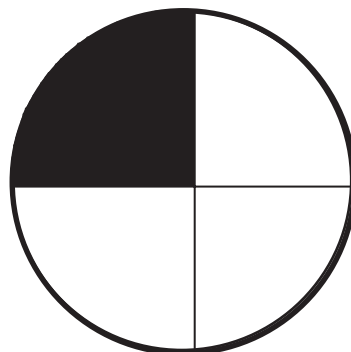
- When you are told to start, choose **one** correct answer from the suggested answers.
- Answer **all** questions by choosing the correct answer from the options given.
- Make calculations on your rough paper, do not guess answers.

1. What is the number shown on the abacus?



- A. 1003 B. 1,0003 C. 10,003 D. 10,030
2. 36 974 to the nearest ten thousand is
- A. 36 900. B. 47 900. C. 40 000. D. 46 000.
3. Which of the following is a prime number?
- A. 33 B. 45 C. 1 D. 47
4. $30\,000 + 800 + 2$ is
- A. 38 002. B. 30 820. C. 30 802. D. 38 002.
5. Which sign is appropriate to put in the gap between the two numbers 107 112 [] 99990?
- A. > B. < C. = D. /
6. What is the equivalent fraction of the shaded part?

Shaded part

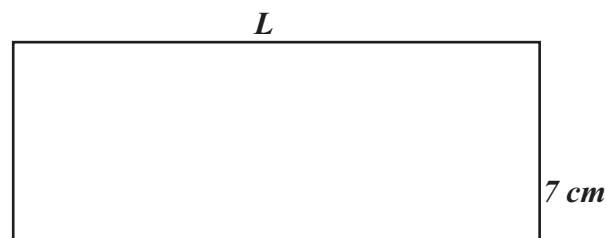


- A. $\frac{20}{50}$ B. $\frac{10}{50}$ C. $\frac{25}{100}$ D. $\frac{4}{10}$

22. $18 \div 3 \times 2 + 8$ is
- A. 11. B. 20. C. 16. D. 32
23. Express 90c to \$2.70 as a ratio in its simplest form.
- A. 1:30 B. 1:3 C. 30:1 D. 3:1
24. If 240 is shared in the ratio 2:3, the largest share is
- A. 244. B. 144. C. 243. D. 96
25. A line 10cm long is drawn on paper to represent 8 km. What scale is used?
- A. 1: 0,8 B. 1:80 C. 1: 8000 D. 1:80 000
26. Below is information for FC Company on the month of February.

Item	Expenditure
Electricity	\$920,00
Water	\$350,00
Transport	\$ _____
Food	\$2800,00
Total	\$5200,00

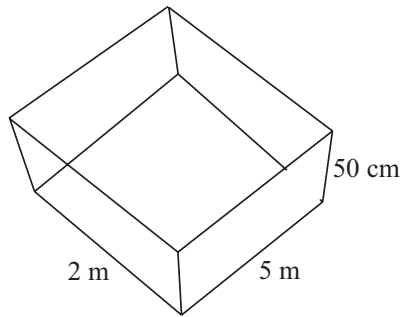
- What amount was spent on transport?
- A. \$3070,00 B. \$1130,00 C. \$2230,00 D. \$350,00
27. After selling all his fruits at \$600,00, a vendor made a loss of \$120,00. At how much did he buy this order of fruits?
- A. \$720 B. \$780,00 C. \$680,00 D. \$480,00
28. A shopkeeper gave his customer \$4.60 as change after buying an item for \$6,40. How many \$5,00 notes were given to the shopkeeper?
- A. 1 B. 2 C. 3 D. 4
29. The church service starts at 2.15 p.m. If Peter arrives 30 minutes late, the time in 24-hour notation will be
- A. 445 hours. B. 245 hours. C. 1445. D. 14.45.
30. 750 kgs in tonnes is
- A. 75. B. 0,75. C. 7,5. D. 0,075
31. The area if the shape above is 84 cm^2



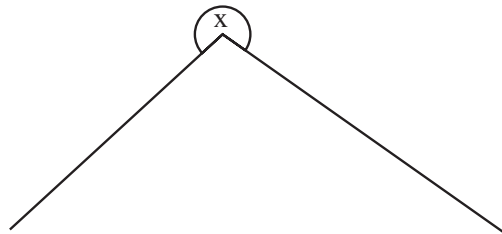
What is its length?

- A. 6 cm B. 12 cm C. 8 cm D. 9 cm

32. A rectangular school yard measuring 1 km by 0,2 km is to be fenced. What is the length of the security fence needed?
- A. 1200m B. 2400m C. 4400m D. 3400m
33. The exchange rate on a particular day is USD \$1,00: ZWL 85,00. How much is USD \$3 on this day?
- A. ZWL 853,00 B. ZWL 255,00 C. ZWL 243,00 D. ZWL 88,00
34. The machine uses 2 litres of petrol per hour. What quantity of petrol is needed to run the machine for $4\frac{1}{2}$ hours ?
- A. 8 litres B. 10 litres C. 9 litres D. 12 litres
35. The area of a square with a side 8 cm long is
- A. 80 cm^2 B. 56 cm^2 C. 32 cm^2 D. 64 cm^2
36. The volume of the shape below is



- A. 5 m^3 .
 B. 500 m^3 .
 C. 5000 m^3 .
 D. 10 m^3 .
37. How many right angles make a revolution?
- A. 4
 B. 3
 C. 2
 D. 5
38. The angle marked X is

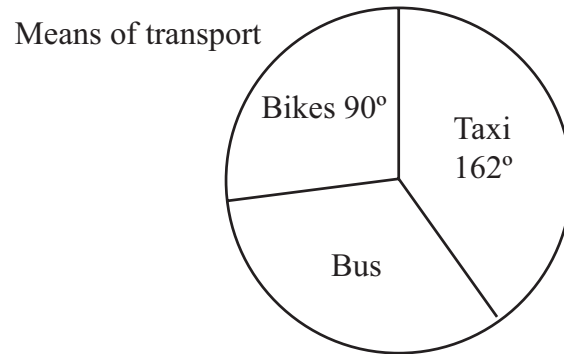


- A. acute angle.
 B. reflex angle.
 C. obtuse angle.
 D. right angle.

39. What is the radius of a circle with a diameter of 20 cm?

- A. 40 cm
- B. 60 cm
- C. 50 cm
- D. 10 cm

40. The pie chart shows the means of transport used by 100 students to go to school.



How many students come to school by bus?

- A. 25
- B. 30
- C. 45
- D. 50

GRADE 6 EXAMINATION PRACTICE 1

MATHEMATICS

702/2

PAPER 2

TIME: 2 HOURS

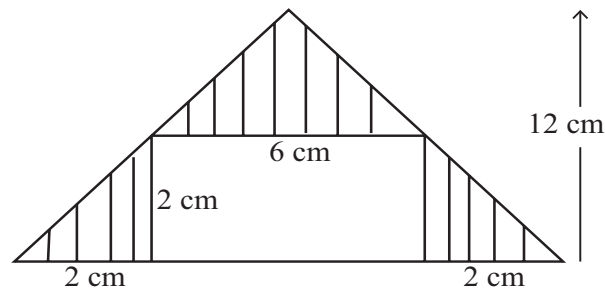
INSTRUCTIONS TO CANDIDATES

- Answer **all** questions in **Section A** and any **three** questions in Section B.
- If more than **three** questions are answered in **Section B**, the first three will be considered.
- If working is needed for any question it must be shown.
- Omission of essential working may result in loss of marks.
- Marks allocated to each question are shown in brackets.
- Electronic calculators and slide rules **must not** be used in the examination.

Section A (25 marks)

Answer **all** questions in this section.

- Find the sum of 987 and 205. [1]
 - Simplify $\frac{6}{7} + \frac{6}{7} \div \frac{6}{7} - \frac{7}{10}$ [2]
- Calculate 20% of \$5,00. [1]
 - Find the product of 60 and 15. [2]
- Find the HCF of 36 and 45. [2]
 - Divide 97 by 5. [2]
- The scale is 1:10000
 - Find the distance in metres on the ground represented by 5cm. [1]
 - Calculate the length on the paper of 6,5 Km. [2]
- Calculate the number of hours in 3 days. [1]
 - A bus departed in Masvingo at 1100 and arrived in Harare at 3.30 p.m the same day.
Calculate the time taken by the bus to travel from Masvingo to Harare. [2]
- Find the area of the shaded part. [3]



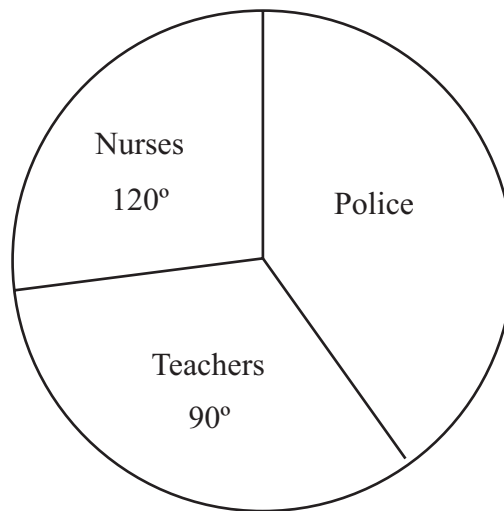
- Calculate the number of litres in 8500 cm^3 . [1]
 - Calculate $\frac{3}{4}$ of a revolution and give the answer in degrees. [2]

8. (a) Draw the lines of symmetry on letter A of the alphabet. [2]
 (b) The mass of a lorry is 3 tonnes when loaded the mass increases to 6.5 tonnes. Calculate the net mass in kilograms. [2]

Section B (15 marks)

*Answer any **three** questions in this section.*

9. (a) An item costs \$17.50 . Calculate change that is given when a customer pays \$20.00. [2]
 (b) A man sells tomatoes for \$625.00 thereby making profit of \$71.25. Calculate his buying price. [3]
10. (a) A square has a side 10 cm long. Calculate its area. [2]
 (b) Find the perimeter in km of a rectangular plot that measures 700m by 500m. [3]
11. There are 600 learners at Francis Apiri Primary School and $\frac{2}{3}$ of them are boys. [2]
 (a) Find the number of girls. [2]
 (b) Express the ratio of boys to girls in its lowest terms. [3]
12. (a) Tendai's father is three and half decades older than her. Tendai is 13 years old. Find the age of Tendai's father. [3]
 (b) Calculate $\frac{1}{3}$ of 2 days. [2]
13. The diagram shows a pie chart of 200 workers who were vaccinated against Covid-19 at a particular area.



- (a) Find the number of teachers who were vaccinated. [2]
 (b) Calculate the number of police officers who were vaccinated. [3]

GRADE 6 EXAMINATION PRACTICE 10

MATHEMATICS

702/1

PAPER 1

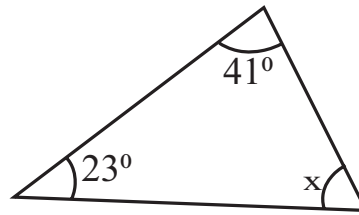
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- When you are told to start, choose **one** correct answer from the suggested answers.
- Answer **all** questions by choosing the correct answer from the options given.
- Make calculations on your rough paper, do not guess answers.

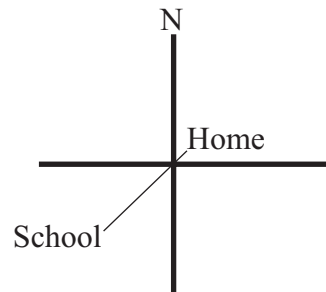
- The value of 9 in 439 282 is
A. 9 000. B. 900. C. 90 000. D. 9.
- Expand 679 423
A. $6 + 7 + 9 + 4 + 2 + 3$
B. $6000 + 700 + 9 + 400 + 20 + 3$
C. $600\,000 + 70\,000 + 9\,000 + 423$
D. $600\,000 + 70\,000 + 9\,000 + 400 + 20 + 3$
- $900\,493 \square 799\,493$
A. $>$ B. \div C. $<$ D. $=$
- A tanker had 473 142 litres of oil in 5 trips. Round off the oil to the nearest ten thousand.
A. 473 140 B. 470 000 C. 500 000 D. 473 000
- Arrange these fractions in descending order $\frac{1}{2} \frac{7}{8} \frac{4}{6}$
A. $\frac{7}{8} \frac{1}{2} \frac{4}{6}$ B. $\frac{4}{6} \frac{7}{8} \frac{1}{2}$ C. $\frac{1}{2} \frac{4}{6} \frac{7}{8}$ D. $\frac{7}{8} \frac{4}{6} \frac{1}{2}$
- $6\frac{1}{2} \square 6\frac{4}{8}$
A. \div B. $<$ C. $=$ D. $>$
- $\frac{22}{25}$ as a percentage
A. 21% B. 25% C. 84% D. 88%
- 0.272 in words is
A. zero comma two hundred and seventy two.
B. zero, two seventy two.
C. two hundred and seventy two.
D. zero comma two seven two.
- 3.479 to the nearest hundredth
A. 3.5 B. 3.0 C. 3.48 D. 3.470
- Naledi scores 24 out 25 marks in an ICT test. What percentage score is this?
A. 24% B. 25% C. 49% D. 96%

34. The angle marked X is



- A. 41° B. 116° C. 64° D. 23°

35. The direction of the school from home is



- A. South west B. North C. South D. North west

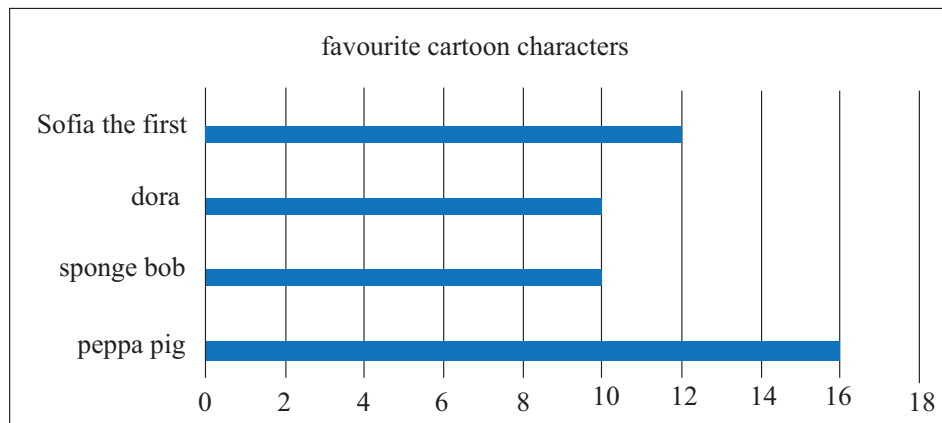
36. A shape with 6 sides and 6 corners is a

- A. pentagon. B. octagon. C. hexagon. D. pentagon.

37. A rectangle has ____ lines of symmetry.

- A. 4 B. 2 C. 6 D. 3

Use the graph below to answer question 38-40



38. How many children likes sponge bob?

- A. 16 B. 12 C. 20 D. 10

39. How many more children like peppa pig than sponge bob?

- A. 16 B. 10 C. 6 D. 26

40. How many children watch cartoons altogether?

- A. 16 B. 48 C. 38 D. 26

GRADE 6 EXAMINATION PRACTICE 10

MATHEMATICS

702/2

PAPER 2

TIME: 2 HOURS

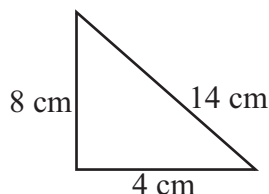
INSTRUCTIONS TO CANDIDATES

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Section A (25 marks)

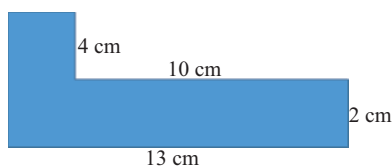
Answer **all** questions from this section.

- Expand 431 976. [1]
 - Find the value of the underlined digit in 514 091. [1]
 - Write down 91 in roman numerals. [1]
- Round off 33 559 to the nearest 1000. [1]
- $$\begin{array}{r} \text{TTH TH H T U} \\ 70303 \\ - 12389 \\ \hline \end{array}$$
 [2]
 - Simplify 16% of 40. [2]
- Mela used 27 watering cans to water 9 beds. Calculate the number of cans she used in 1 bed. [2]
 - Convert 60 kgs to tonnes. [1]
 - The net mass of a cart is 500kg. The maximum load it can carry is 400kg. Calculate the gross mass. [2]
- Find the area of the triangle below is.



[2]

- Find the perimeter of the shape below.



SUGGESTED ANSWERS TO ALL EXERCISES

UNIT 1: WHOLE NUMBERS

Practice Exercise 1 (Suggested Answers)

1. (a)

Hundreds	Tens	Units
••		••••• ••
2	0	7

(b)

Thousands	Hundreds	Tens	Units
••••• •	•	•••	••
6	1	3	2

(c)

Ten thousands	Thousands	Hundreds	Tens	Units
•	••	••••• •••	••••• ••	••
1	2	8	7	2

(d)

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
••••• •					
6	0	0	0	0	0

(e)

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
••					
2	0	0	0	0	0

(f)

Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
•••••	••••• ••	••••• •	••••• •••	••••• ••••	•
5	7	6	8	9	1

(d)

Item	Quantity	Unit price	Total
2 kg rice	4	\$2.00	\$8.00
1 kg flour	2	\$1.50	\$3.00
1kg kapenta	3	\$5.00	\$15.00
Total			\$26.00

(e)

Item	Quantity	Unit price	Total
2 kg rice	3	\$2.00	\$6.00
1 litres cooking oil	1	\$3.50	\$3.50
1 kg kapenta	3	\$5.00	\$15.00
1 kg flour	3	\$1.50	\$4.50
Total			\$29.00

2. For each of the invoices above, calculate the change from a \$50 bill.

(a) $\$50.00 - \$15.00 = \$35.00$

(b) $\$50.00 - \$16.50 = \$33.50$

(c) $\$50.00 - \$12.50 = \$37.50$

(d) $\$50.00 - \$26.00 = \$24.00$

(e) $\$50.00 - \$24.50 = \$25.50$

(f) $\$50.00 - \$29.00 = \$21.00$

Practice Exercise 41 (Suggested Answers)

Article	Buying price	Selling price	Profit/Loss	Is it profit or loss?
Bread	\$2 540	\$3 020	\$480	profit
Sugar	\$3 250	\$3 750	\$500	profit
Mealie meal	\$421 320	\$402 320	\$19 000	loss
Washing powder	\$205 455	\$324 020	\$118 565	profit
Seed	\$850 450	\$795 450	\$55 000	loss

UNIT 14: TIME

Practice Exercise 42 (Suggested Answers)

1.

Unit of time	Equivalent
Century	100 years
Decade	10 years
Leap year	366 days
Month	30 days
Fortnight	2 weeks
Week	7 days
Day	24 hours
Hour	60 minutes

UNIT 21: SHAPES

Practice Exercise 60 (Suggested Answers)



(a) Square



(b) Rectangle



(c) Triangle

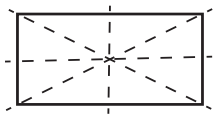


(d) Hexagon

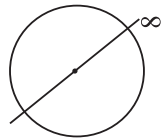


(e) Pentagon

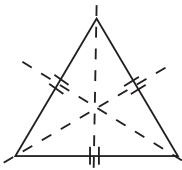
Practice Exercise 61 (Suggested Answers)



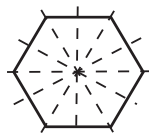
(a) Rectangle



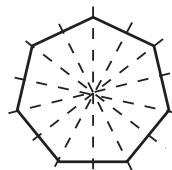
(b) Circle



(d) Equilateral triangle

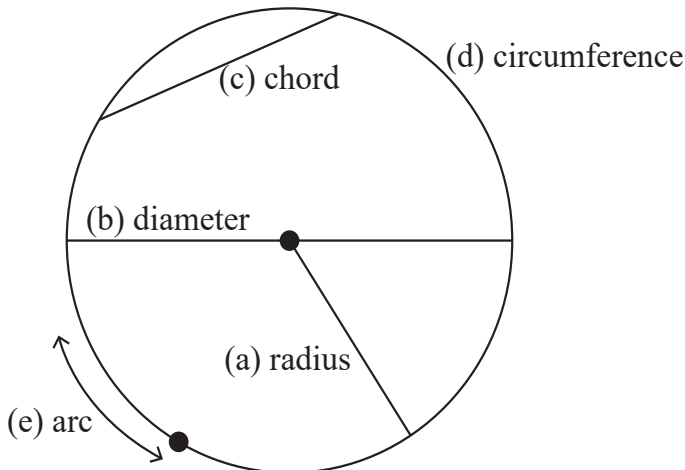


(e) Hexagon



(f) Heptagon

Practice Exercise 62 (Suggested Answers)



TOPIC 4: RELATIONSHIPS: DATA HANDLING

UNIT 22: DATA HANDLING

Practice Exercise 63 (Suggested Answers)

Interpret the following table and answer the questions below.

ALL EXAM PRACTICE PAPER 2 ANSWERS

EXAMINATION PRACTICE 1 - PAPER 2 ANSWERS

SECTION A

1. (a) 1192
(b) $1\frac{11}{70}$
2. (a) \$1,00
(b) 900
3. (a) 9
(b) 19 remainder 2
4. (a) 500m
(b) 65 cm
5. (a) 72 hours
(b) 4 hours 30 minutes
6. (a) 48cm^2
7. (a) 8,5 litres
(b) 270
8. (a) Draw the lines of symmetry on letter A.
(b) The net mass is 3 500kg

SECTION B

9. (a) \$2,50
(b) \$553,75
10. (a) 100cm^2
(b) 2. 4 km
11. (a) 200girls
(b) 2 : 1
12. (a) 48 years
(b) 16hours
13. (a) 50 teachers
(b) 83

EXAMINATION PRACTICE 2 - PAPER 2 ANSWERS

SECTION A

1. Three hundred thousand and two.
2. 347 000
3. $\frac{4}{10}$
4. =
5. $\frac{1}{2} \frac{2}{5} \frac{3}{10} \frac{1}{4}$
6. (a) 333 900 (b) 457 472 (c) 0
7. (a) 125 (b) 770
8. (a) \$66 (b) 2021-06-13 (c) 100
9. (a) 3kg (b) 34cm (c) Acute