

Revision exercise 2.1

1. (a) Simplify
 - (i) $33y + 11$
 - (ii) $\frac{1}{2}$ of $(-4x)$
 - (iii) $8x - 7x + 5x$
 - (iv) $4d - 22d + 13d + 10d - 3d$
 - (v) $9c + 10d - 5c - 4d$
 - (vi) $5x - 3y - 7x + 9y + 3x - 4y$
- (b) Bob has 7 marbles more than Bill, who has m marbles.
 - (i) How many marbles does Bob have?
 - (ii) Find how many marbles Bonnie has if he has b marbles less than Bill.
 - (iii) How many marbles do the three boys have altogether?
2. Express the ratio of the first quantity to the second as simply as possible
 - (i) in fraction form (ii) in the form $m : n$
 - (a) 960 ml ; 1320 ml
 - (b) Sh 2 400 ; Sh 640
 - (c) 400 g ; $\frac{1}{4}$ kg (d) $3\frac{1}{2}$ hr ; 45 min
 - (e) Sh 12.50 per g ; Sh 125 per kg
 - (f) 3 m per s ; 60 km per hour.
3. Convert the given measurements to the stated units.
 - (a) 3 600 000 cm to m (b) 0.532 cm to mm
 - (c) 2 500 kg to tonnes (d) 0.0042 tonnes to kg
 - (e) 0.000 56 km to m (f) 4.5 cm^2 to mm^2
 - (g) $64\ 000 \text{ m}^2$ to km^2 (h) 12.45 km^2 to ha
4. Find the width and perimeter of a rectangle with
 - (a) area = 48 cm^2 , length = 8 cm
 - (b) area = 108 m^2 , length = 12 m
 - (c) area = 10 m^2 , length = 6 m
 - (d) area = $4\ 840 \text{ m}^2$, length = 55 m
5. A table has 4 cylindrical legs of diameter 6 cm and length 84 cm. Calculate the total volume of the legs.
6. Add the following and give your answers in the stated units.
 - (a) 4 g 7 dg ; 8 g 9 mg (in g)
 - (b) 2 dg 8 mg ; 7 cg 5 mg ; 2 g 7 mg (in g)
 - (c) 1 kg 48 g ; 2 kg 162 g (in kg)
 - (d) 2 kg 150 g ; 1 kg 75 g ; 3 kg 875 g (in kg)
7. A bus left Nairobi at 2230 h on Monday and arrived in Dar es Salaam on Tuesday at 1715 h. How long was the whole journey?
8. Solve the following equations.
 - (a) $7n = 8 + 3n$
 - (b) $-7x + 8 = 4 - 3x$
 - (c) $6x + 7 - 5x = -3 - 2x + 19$
 - (d) $7 + y - 13 = 3y + 21 - 5y$
9. Find the value of
 - (a) $8c - 3 - 5c$ if $c = 4$
 - (b) $4mn - 3n$ if $m = 5$ and $n = 2$
 - (c) $2p^2 + 3p - 22$ if $p = -3$
 - (d) $tu - v$ if $t = 2$, $n = 4$, $u = 1$ and $v = 3$
10. (a) Use elimination method to solve the simultaneous equations
 - (i) $x + 2y = 11$ (ii) $3x - y = 11$
 - $2x - y = 2$ $2x - 3y = 5$
- (b) Use substitution method to solve the simultaneous equations
 - (i) $x - 2y = 27$ (ii) $4x = 3y + 2$
 - $7x + y = 9$ $3x + y + 1 = 0$
11. On a particular day, the exchange rates at the Central Bank of Kenya were given as

UK £ 1 = Ksh 88.6903
1 Indian Rupee = Ksh 1.5245

Use the given rates to convert

 - (a) UK£ 202.5 into Kenya shillings
 - (b) Ksh 5 036 into UK£
 - (c) 7 500 Indian Rupees into Kenya shillings
 - (d) Ksh 650 into Indian Rupees, giving your answers to the nearest whole number.

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Handwritten calculation: $\frac{15}{30}$

Handwritten note: RRY x 5000

Handwritten number: 333

12. A Kenyan bought a car in Zimbabwe for 120 000 Z dollars. In Kenya, he sold it at a profit of 15%. If 1 Z dollar = Ksh 9.848 9, calculate his profit in, Kenya shillings.

Revision exercise 2.2

1. (a) Remove brackets and then simplify
 (i) $3m + 2(m + 2n)$ (ii) $7x - (5x + 2x)$
 (iii) $5r - (r - 3r)$ (iv) $5t - 3(u + 2t)$
 (v) $2(x - 3y) + 3(x + y)$
 (vi) $\frac{2}{3}(12p + 9q - 15r) - 3(p + q - r)$

- (b) Factorise each of the following expressions.

- (i) $a(c + d) + b(c + d)$
 (ii) $p(x - y) - q(x - y)$
 (iii) $ac + ad - bc - bd$
 (iv) $x^2 - cx - dx + cd$
 (v) $pr - qs + ps - qr$
 (vi) $a^2 + 2b - 2a - ab$

2. (a) In what ratio must the first value be increased so as to get the second value?
 (i) 24, 32 (ii) £1, £1.75
 (iii) £3.75, £10 (iv) 2.25 m, 4.05 m

- (b) In what ratio must the first value be decreased so as to get the second value?
 (i) 14 kg, 10 kg
 (ii) £2.5, £1.5
 (iii) 54 km/h, 45 km/h
 (iv) 2 h, 1 h 40 min

3. Find (i) the perimeters, (ii) the areas of the shapes in Fig. R2-1. Measurements are in centimetres. Take $\pi = 3.14$

(a)

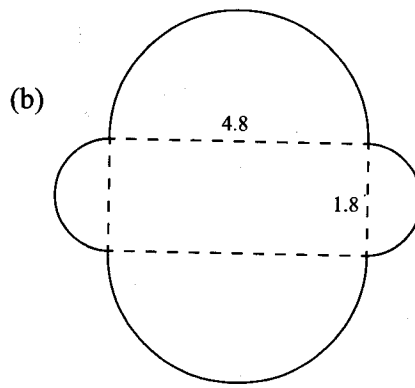
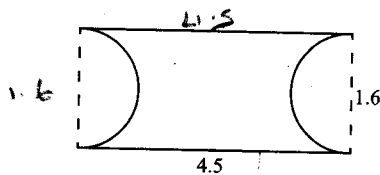


Fig.R2-1

4. Find the area of the metal sheet used for making

- (a) a closed box measuring 2.5 m by 4 m by 3 m.
 (b) an open rectangular tank measuring 2 m by 7.5 m and of height 3.8 m.

5. Find the surface area of

- (a) a closed cylinder of diameter 30 cm, height 16 cm.
 (b) an open cylindrical container, radius 0.8 m, height 1.2 m.
 (c) a pipe whose external radius is 0.3 m and of length 16 m. (External curved surface only).

6. A cylindrical steel bar has a diameter 2.8 cm and a length of 3.75 m. What is its volume?

7. (a) A truck was to carry 932 bags of maize each of mass 90 kg. What was the total mass in tonnes?

- (b) A rectangular tank is 2.1 m by 0.9 m by 1.2 m.

(i) Find the volume of the tank in m^3 .

(ii) If the density of a liquid is 1.2 tonnes/ m^3 , find the mass of the liquid needed to fill the tank.

8. An aircraft left Abidjan at 2215 h and arrived in Entebbe at 0330 h. It departed from Entebbe at 0450 h and arrived in Nairobi at 0645 h. Assuming the times quoted are all Kenyan time, find

- (a) how long the plane took between
 (i) Abidjan and Entebbe
 (ii) Entebbe and Nairobi
 (b) how long the journey was from Abidjan to Nairobi?

9. Solve the following equations.

- (a) $7m = 8 + 3m$
 (b) $6x + 15 = 13 + 4x$
 (c) $8x - 7 - 4x = 3x + 9$
 (d) $\frac{3}{4}x = 18$
 (e) $22 = 7 + 2\frac{1}{2}x$
 (f) $3\frac{1}{2}x - 26 = 10 - 5\frac{1}{2}x$

10. Solve the simultaneous equations.

(a) $3q - p = 6$ (b) $m + \frac{1}{2}n = 13$
 $-10q + 3p = 15$ $\frac{1}{3}m - n = 2$

(c) $\frac{2x}{5} - \frac{y}{3} = 2\frac{2}{3}$
 $x = 2(y + 1)$

(d) $3x + \frac{1}{2}y = 8x + 7y - 9 = 2$

11. Mrs. Kanana has exactly Sh 700 in her handbag. This money is composed of Sh 50 notes and Sh 100 notes. If she has a total of 11 notes, how many notes of each kind does she have?

12. A sales girl with an international company based in Nairobi is paid commission as follows:

- 12% for sales up to Sh 120 000
 15% for sales between Sh 120 000 and Sh 480 000
 18% for sales in excess of Sh 480 000.

If she sold goods worth Sh 560 000 in a certain month, how much commission did she receive?

Revision exercise 2.3

1. Simplify

(a) $\frac{15a}{20ab}$ (b) $\frac{30abc}{35dac}$ (c) $\frac{96xy}{60x^2y^2}$

(d) $\frac{7}{pq} - \frac{3}{pq} + \frac{1}{pq}$ (e) $\frac{3}{ab} + \frac{5}{ad} - \frac{2}{bd}$

(f) $\frac{4mn}{7p} \times \frac{2p}{16m}$

2. One student got x marks in a test. Another student got 8 marks less. If the first student got $1\frac{1}{3}$ times of what the second one got, find how many marks each got.

3. Given that $\frac{1}{v} = \frac{1}{u} + \frac{1}{f}$, and that $v = 5$ and $u = 3$, find the value of f .

4. What number must be added to the numerator and be subtracted from the denominator of $\frac{11}{17}$ so that the new fraction may be equal to $1\frac{1}{3}$?

5. (a) The sides of two squares are 8 cm and 12 cm long. Find the ratio of
 (i) their perimeters, (ii) their areas.

(b) An alloy consists of 9.75g of copper and 2.75g of tin. Find the ratio by mass of copper to the alloy.

(c) A camp has enough food ration to last 10 000 refugees for 35 days. After 5 days, 2 500 more refugees arrive in the camp. If all are now put on half-ration, how much longer will the food last?

6. Find the area of a frame round the edge of a picture 90 cm by 60 cm if the frame is

- (a) 7.5 cm broad (b) 3 cm broad.

7. A goat is tethered by a rope 20 m long to a post in a fenced field 50 m square. What area can the goat cover if the post is

- (a) at the middle point of one side of the

(b) at a corner of the field ?

8. A swimming pool is 20 m long, 8 m wide, 0.5 m deep at the shallow end and 2 m deep at the deep end. If the depth of the pool increases uniformly, what is the volume of the pool?

9. Solve

(a) $1\frac{1}{3}x = 13 + \frac{1}{4}x$ (b) $\frac{a+4}{5} - \frac{a-4}{6} = \frac{1}{30}$

(c) $\frac{x+9}{7-x} = 3$ (d) $3 - \frac{1}{4x} = \frac{1}{8x}$

10. (a) Six cows and five sheep cost Ksh 157 500. Five cows and four sheep cost Ksh 131 000. Find the cost of one cow and two sheep.

- (b) A building contractor requires 3 lorries and 8 pickups to move 15 tonnes of sand in one trip. To move 21 tonnes of sand, he would require 2 lorries and 20 pickups. Find the carrying capacity of each type of vehicle.

11. (a) Find the percent profit or loss given

(i) cost price of an item is Sh 720, and selling price is Sh 792.

(ii) cost price is Sh 980 and selling

price is Sh 1176.

(iii) cost price is Sh 450 and selling price is Sh 320.

(iv) cost price is Sh 370 and selling price is Sh 340.

- (b) Juma bought a used car at Sh 500 000. He spent a further Sh 75 000 on it for repairs and modifications. He then sold it at a 20% profit. How much did he get from this sale ?

12. Okeyo and Koech contributed Sh 120 000 and Sh 140 000 respectively to start a business. They agreed that 25% of the profit will be shared equally, 25% of the profit will be shared in the ratio of their contributions, and 50% will be retained in the business. In the first year, the profit from the business amounted to Sh 195 000.

(a) How much did each receive ?

(b) How much was retained in the business?

(c) Okeyo bought dairy cows with his share of the profit. How many cows did he buy if they cost Sh 16 000 each?