

PRACTICE WORKSHEET + FULL ANSWER KEY

Mathematical Literacy: budgets, units and data

Senior school practical-number skills; original topic practice. Work through the sections in order, or choose the one that matches this week's topic.

QUESTIONS	SECTIONS	ANSWER KEY	WORKING SPACE
52	5	At the back	Ruled

Name _____ Class _____ Date _____

Before you start

Read the context before choosing a calculation. State the units and explain what the result means for the practical decision. The amounts in this worksheet are fictional examples in South African rand.

WORKED EXAMPLE

A household has R4,000 available and plans R1,250 for food, R800 for transport and R600 for electricity. How much remains?

- 1 Add the planned expenses: $1,250 + 800 + 600 = R2,650$.
- 2 Subtract expenses from the available amount: $4,000 - 2,650 = R1,350$.
- 3 R1,350 remains before any other expenses. This is an arithmetic result, not a recommendation about spending.

Use this method as your model. Set out your own working the same way.

Common mistakes to avoid

- Using a percentage of the wrong starting amount
- Mixing centimetres and metres in one calculation
- Treating an estimated budget as a complete list of expenses

There are 52 questions across 5 sections. Write in the ruled space, then mark your work against the answer key at the back. Topics covered: Budgets and percentages, Measurement and units, Reading data.

SECTION A Budgets and money

Read the context before choosing a calculation, and say what the result means for the decision.

- 1 A learner budgets R900. Transport costs R240 and materials cost R175. How much remains?

- 2 A household has R4,000 available and plans R1,250 for food, R800 for transport and R600 for electricity. How much remains?

- 3 Monthly income is R7,500 and expenses are R6,180. Find the monthly surplus.

- 4 A surplus of R1,320 is saved each month. How much is saved in a year?

- 5 A phone contract costs R199 a month for 24 months. Find the total cost.

- 6 Food costs R1,250 of a R4,000 budget. What percentage is that?

- 7 Rent rises from R3,200 to R3,456. Find the percentage increase.

- 8 A budget splits R9,000 in the ratio 5:3:2 for living, saving and giving. Find each share.

- 9 Explain the difference between a fixed and a variable expense, with an example of each.

- 10 A bank charges R6.50 per withdrawal. Find the cost of 14 withdrawals in a month.

- 11 Explain why a budget should include an amount for unexpected costs.

SECTION B Percentages, interest and tariffs

Decide first whether the question wants the change itself or the final amount.

- 12 A bag costs R360 before a 15% discount. Calculate the discount and the sale price.

- 13 Find 14% of R2,500.

- 14 A price of R450 excludes 15% VAT. Find the price including VAT.

- 15 A price of R575 includes 15% VAT. Find the price before VAT.

- 16 R5,000 earns 8% simple interest per year. Find the interest after 3 years.

- 17 Find the total value of that investment after 3 years.

- 18 R5,000 earns 8% compound interest per year. Find the value after 3 years, to the nearest rand.

- 19 Explain the difference between simple and compound interest.

- 20 A loan of R12,000 is repaid in 24 instalments of R620. Find the total repaid and the extra cost.

- 21 An electricity tariff is R180 per month plus R2.40 per unit. Find the cost of 320 units.

- 22 For that tariff, how many units give a total bill of R1,020?

SECTION C Measurement, conversion and rates

State the units at every step. A rate is only meaningful with its units attached.

- 23 A tank holds 2.4 kilolitres. Express this capacity in litres.

- 24 A room is 4 m long and 3.5 m wide. Find its floor area.

- 25 Tiles cost R145 per square metre. Find the cost of tiling that room.

- 26 Paint covers 9 m² per litre. How many litres are needed for 63 m²?

- 27 A recipe for 6 people uses 900 g of rice. How much is needed for 10 people?

- 28 A car uses 7.5 litres per 100 km. Find the fuel needed for a 340 km trip.

- 29 Fuel costs R23.40 per litre. Find the fuel cost of that trip, to the nearest rand.

- 30 A journey of 210 km takes 2 hours 30 minutes. Find the average speed.

- 31 Convert 1.75 hours into hours and minutes.

- 32 Explain why units must match before two lengths are added.

SECTION D Reading and interpreting data

Check the axis, the scale and the source before you read a single value.

- 33 A class records travel times of 20, 25, 25, 30 and 40 minutes. Find the mean and the median.

- 34 For that data, find the range.

- 35 A pie chart shows food as 25% of a R4,000 budget. Find the amount.

- 36 A bar chart shows rainfall of 40, 65, 25 and 90 mm. Find the total and the mean.

- 37 For that rainfall data, which value is furthest from the mean?

- 38 Explain why a broken vertical axis can mislead a reader.

- 39 Costs for 1, 2 and 3 items are R80, R150 and R210. Is the rate constant? Explain.

- 40 A graph of cost against distance is a straight line through (0, 180). Explain the 180.

- 41 State one question to ask about the source of a statistic in an advertisement.

- 42 A sample of 8 households is used to describe a town. Give one limitation.

SECTION E Plans, scale and making a decision

Show the calculation, then write the sentence that answers the actual question.

- 43 A plan uses a scale of 1:50. A wall measures 8 cm on the plan. Find its real length.

- 44 On a 1:100 plan, how long is a 6.5 m wall?

- 45 A room is 5 m by 4 m. Find the perimeter and the cost of skirting at R62 per metre.

- 46 A garden is 12 m by 9 m. Find the area and the cost of grass at R48 per square metre.

- 47 A fridge costs R6,400 cash, or R800 deposit and 12 payments of R520. Compare the totals.

48 State one non-financial reason the instalment plan could still be chosen.

49 A tap leaks 3 litres an hour. How many litres leak in a week?

50 Explain why an estimate is useful before a calculation.

51 A quote is R12,650 excluding 15% VAT. Find the amount payable.

52 Write a short recommendation comparing two options and name your assumption.

Answer key

Work each section before you check it. These are model answers: an equivalent method, or a different well-supported interpretation, can be just as correct.

SECTION A - BUDGETS AND MONEY

1. R485 remains: $900 - 240 - 175 = 485$.
2. R1,350 remains before any other expenses.
3. R1,320.
4. R15,840.
5. R4,776.
6. 31.25%, which is about 31%.
7. 8%.
8. R4,500, R2,700 and R1,800.
9. A fixed expense is the same each month, for example rent; a variable expense changes, for example electricity.
10. R91.
11. Unplanned expenses such as repairs would otherwise be paid from money already allocated, pushing the budget into deficit.

SECTION B - PERCENTAGES, INTEREST AND TARIFFS

12. Discount R54; sale price R306.
13. R350.
14. R517.50.
15. R500.
16. R1,200.
17. R6,200.
18. R6,299.
19. Simple interest is calculated on the original amount each period; compound interest is calculated on the growing balance, so it accumulates faster.
20. R14,880 repaid, which is R2,880 more than the amount borrowed.
21. R948.
22. 350 units.

SECTION C - MEASUREMENT, CONVERSION AND RATES

23. 2,400 litres, because 1 kilolitre = 1,000 litres.
24. 14 square metres.
25. R2,030.
26. 7 litres.
27. 1,500 g, which is 1.5 kg.
28. 25.5 litres.
29. R597.
30. 84 km/h.
31. 1 hour 45 minutes.
32. Adding centimetres to metres without converting gives a meaningless number; convert both to the same unit first.

SECTION D - READING AND INTERPRETING DATA

33. Mean 28 minutes; median 25 minutes.
34. 20 minutes.
35. R1,000.
36. Total 220 mm and mean 55 mm.
37. The 90 mm month, which is 35 mm above the mean.
38. It exaggerates the differences between bars, so a small change looks large.
39. No. The cost per item falls from R80 to R75 to R70, so a discount applies as quantity rises.
40. It is the fixed charge that applies before any distance is travelled.
41. Who collected the data and how, and whether the comparison being made is fair.
42. The sample is far too small to represent the variation across a whole town.

SECTION E - PLANS, SCALE AND MAKING A DECISION

43. 400 cm, which is 4 m.
44. 6.5 cm.
45. Perimeter 18 m; skirting costs R1,116.
46. Area 108 m²; the grass costs R5,184.
47. Cash R6,400; instalments R7,040, which is R640 more.
48. For example not having R6,400 available at once, so the fridge can be used sooner.
49. 504 litres.
50. It shows roughly what to expect, so a keying error or misplaced decimal point is easy to spot.
51. R14,547.50.
52. A recommendation with the calculation, the option chosen and the assumption behind it, such as prices staying unchanged.

Review and next steps

Mark your work against the answer key, record your score for each section, then answer the three questions below. Bring this page to your next lesson so your tutor can start from what actually blocked you.

Which question did you find hardest, and what exactly stopped you?

Rewrite the corrected working for that question here.

Which section do you want to practise again before your next lesson?

Score record

SECTION	QUESTIONS	NUMBER CORRECT	PRACTISE AGAIN?
A. Budgets and money	11		
B. Percentages, interest and tariffs	11		
C. Measurement, conversion and rates	10		
D. Reading and interpreting data	10		
E. Plans, scale and making a decision	10		
Total	52		

Keep going with one-to-one support.

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