

2.2 Calculate earnings, discounts and fair price comparisons

Name: _____ Class: _____ Date: _____ Total: 24 marks

KEY WORDS gross pay 税前工资 • net pay 税后工资 • commission 佣金

Objective

Calculate earnings, discounts and fair price comparisons. Original GAC004-aligned practice, not an official assessment. Show the method as well as the result. All applied scenarios are invented classroom problems.

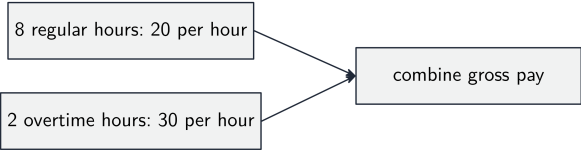
1 Key knowledge and worked examples

■ Key knowledge: follow the stated rules rather than assuming real tax or payment conditions

Gross pay 税前工资 is pay before deductions; **net pay** 税后工资 is pay after the specified deductions. **Commission** 佣金 is a stated percentage or amount linked to sales. Define whether it is based on all sales or only sales above a threshold.

Use total cost divided by quantity for unit-price comparisons. Apply sequential percentage changes with sequential multipliers. A discount followed by a separately added fee differs from discounting the fee too. Every rate, deduction and fee on this sheet is an invented teaching rule, not an actual tax schedule or financial recommendation.

■ Worked example: calculate regular and overtime hours separately



Known: 8 hours at 20 units per hour and 2 overtime hours at 1.5 times that rate. Separate the two categories before adding pay.

$$G = h_r p + h_o k p$$

$$G = 8(20) + 2(1.5)(20) = 220 \text{ units}$$

If the invented fixed deduction is 15 units, take it from gross pay once.

$$N = G - D = 220 - 15 = 205 \text{ units}$$

2 Practice

2.1 A worker earns 18 units per hour for 7 hours. Find gross pay. [2]

2.2 A pack of 12 notebooks costs 30 units. A pack of 20 costs 46 units. Compare cost per notebook. [2]

2.3 A 200-unit item receives a 15% discount. A delivery fee of 6 units is then added. Find the delivered total and the overall saving compared with 200 units, as a percentage of 200. [3]

2.4 An invented pay rule deducts 10% of gross pay plus a fixed 8 units. If gross pay is 360 units, find the total deduction and net pay. [3]

3 Exam-style questions

3.1 A worker completes 35 regular hours at 16 units per hour and 5 overtime hours at 1.5 times the regular rate. Commission is 3% of all sales of 1200 units. A fixed deduction of 22 units applies once. Find regular pay, overtime pay, commission, gross pay and net pay. [6]

3.2 Shop A sells a 500-unit item with a 20% discount and then a 30-unit delivery fee. Shop B sells the identical item with successive 10% discounts and free delivery. (a) Find each total and the difference. (b) Explain why two 10% discounts are not 20% off. (c) Find the largest delivery fee Shop A could charge while costing no more than Shop B. Assume no other charges. [8]

Solutions

2.1

Multiply the rate by hours worked.

$$G = ph = 18(7) = 126 \text{ units}$$

Gross pay 126.

2.2

Divide each total by its count.

$$u_A = C_A/n_A = 30/12 = 2.50$$

$$u_B = C_B/n_B = 46/20 = 2.30$$

The 20-pack costs less per notebook. Both prices and the conclusion earn A1.

2.3

Apply the discount to the item before adding the fee.

$$T = P(1 - r) + F = 200(0.85) + 6 = 176$$

Total 176.

$$s = \frac{P - T}{P} \times 100\% = \frac{200 - 176}{200} \times 100\% = 12\%$$

Overall saving 12%.

2.4

Calculate the percentage and fixed parts.

$$D = rG + F = 0.10(360) + 8 = 44$$

Deduction 44.

$$N = G - D = 360 - 44 = 316$$

Net pay 316.

3.1

Regular pay uses regular hours.

$$R = h_r p = 35(16) = 560$$

Regular pay 560.

$$O = h_o k p = 5(1.5)(16) = 120$$

Overtime pay 120.

$$C = rS = 0.03(1200) = 36$$

Commission 36.

$$G = R + O + C = 560 + 120 + 36 = 716$$

Gross pay 716.

$$N = G - D = 716 - 22 = 694$$

Net pay 694.

3.2

(a) Discount A before adding delivery.

$$T_A = P(1 - r_A) + F = 500(0.80) + 30 = 430$$

A total 430. Apply B's multipliers successively.

$$T_B = P(1 - r_1)(1 - r_2) = 500(0.90)(0.90) = 405$$

B total 405.

$$\Delta = T_A - T_B = 430 - 405 = 25$$

B is cheaper by 25.

(b) The second discount uses the reduced base; the combined multiplier is 0.81, a 19% reduction.

(c) A must satisfy $400 + F \leq 405$.

$$F \leq T_B - 0.80P = 405 - 400 = 5$$

Largest delivery fee 5 units. The conclusion depends on the stated identical item and absence of other charges.