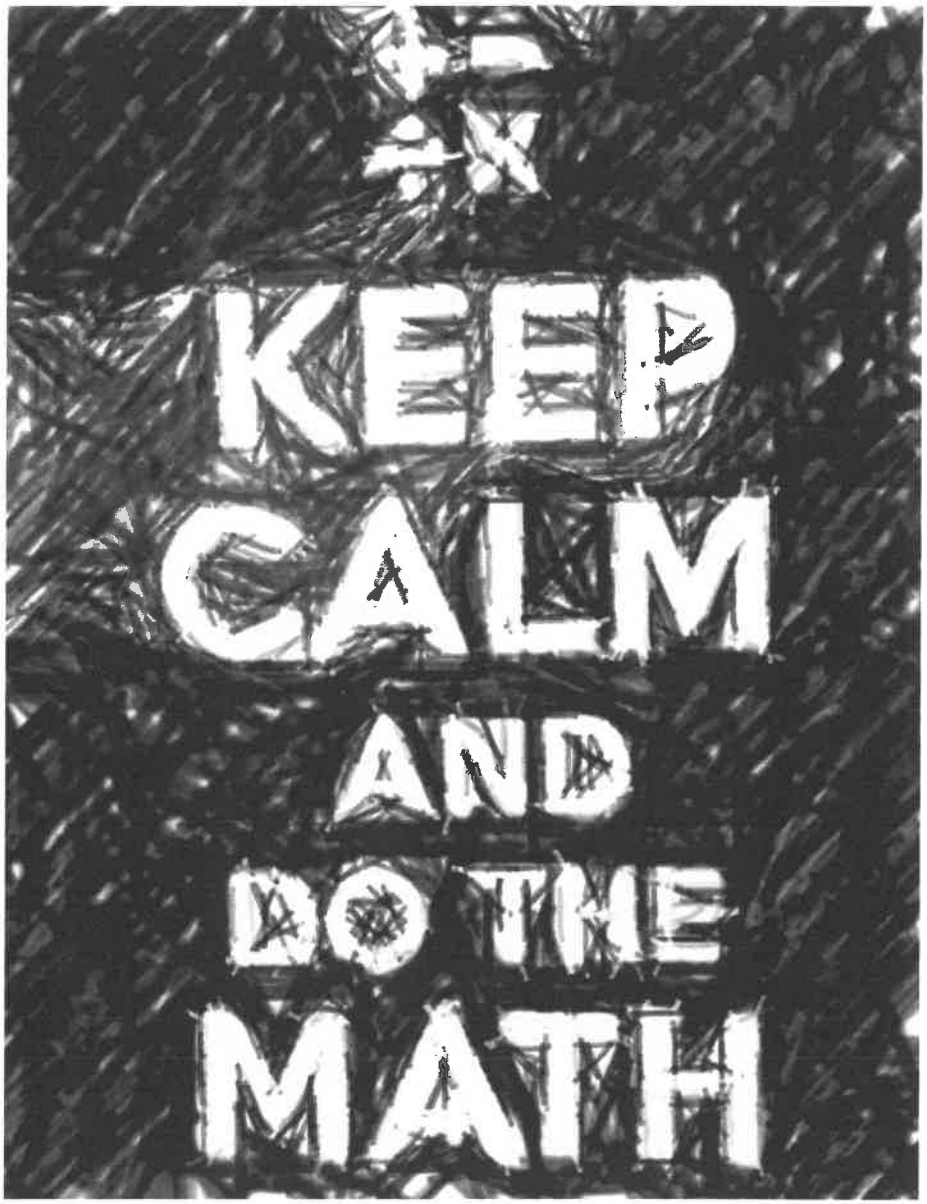
NAME: _____

Math P.A.T. Prep

Solving Problems that Involve Money / Wages / Taxes- SOLUTIONS



St. Brendan School

Mr. Martínez

Solving Problems That Involve Money / Wages / Rates

Safe Bet → * at least 2 problems like this *

- These will be Numerical Response
- one or more
  - ↳ "least", "minimum", "maximum"

A store owner pays a sales clerk $12/h for each hour worked. The assistant manager of the store earns one-and-a-half times the clerk's hourly wage and the manager of the store earns two-and-a-half times the clerk's hourly wage.

Numerical Response

7. In total, how much money is paid to the three employees in one day if the sales clerk, the assistant manager, and the manager each work 7.25 h?

Answer: $ 435

STRATEGY

What do I know / have?

- Sales clerk makes 12 $ per hour
- Assistant Manager → makes 1.5 times more
  - so 12 × 1.5 = 18 $/h
- Manager → 2.5 times 12 $/h
  - = 12 × (2.5) = 30 $/h

What are they asking?

- All work 7.25 h
- Total Money Paid

Sales clerk = 12 $/h × 7.25 h = $87 ← ADD these

Assistant Manager = 18 $/h × 7.25 h = $130.5 ✓

Manager = 30 $/h × 7.25 h = $217.5 ✓

$435

Tara, Jennifer, and Mindy donated some money to a charity. Jennifer donated twice as much as Tara, and Mindy donated $10 less than Jennifer.

17. If the **total** amount donated to the charity is $50, then how much money did Tara donate?

A. $6
B. $8
C. $12
D. $24

$J = 2T$
$M = J - 10$
$M = 2T - 10$

$T + J + M = 50$
$T + 2T + 2T - 10 = 50$
$5T - 10 = 50$
$5T = 60$
$T = \frac{60}{5}$
$T = \$12$

Connie buys a horse for $750 (including GST). She considers the two payment plans shown below.

Plan 1 Pay $150 now and $25 each month
Plan 2 Pay $200 now and $55 each month

27. How many **fewer** monthly payments could Connie make if she selects Plan 2?

A. 10
B. 14
C. 20
D. 24

$750 →
$150 + 25m → 600, then m = 24 months
$200 + 55m → 550, the m = 10 months
24 − 10
↳ 14 months

The following list shows Rick's yearly vehicle expenses.

- Insurance: $1 200
- Gasoline: $1 300
- Repairs: $850

3350

32. If Rick works 8 hours/day, 5 days/week, and takes home $10/hour, then what is the **least** number of complete weeks he must work in order to pay for all his yearly vehicle expenses?

A. 6 weeks
B. 7 weeks
C. 8 weeks
D. 9 weeks

- Must pay $3350
- 8 hours/d × 5 days/weeks = 40 hours/week
- 40 hours/week × $10/hour = 400 $/week
- 3350/400 = 8.375 weeks → 9 weeks

28. Tim buys 2 kg of almonds at $5.49/kg and 4 kg of cashews at a store that includes GST in its prices. If the cost of his purchase is $25.50, then the price of 1 kg of cashews is

A. $3.63
B. $7.26
C. $10.98
D. $14.52

2 kg almonds × $5.49/kg = $10.98 almonds
$25.50 = $10.98 almonds + (4 kg cashews)
$14.52 for 4 kg cashews
× — 1 kg
$3.63/kg

In one month, Dale earned $180.00. He earned $45.00 by washing cars, and the rest by mowing lawns.

Numerical Response

Total Earned = $180

$180 = $45 + lawn money

5. How many lawns did Dale mow if he received $9.00 for each lawn that he mowed?

Answer: 15 **lawns**

180 - 45 = $135 lawn money

$135 / $9 / lawn → 15 lawns

Alan, Bob, and Charles worked together on a job and earned a combined total of $380. Alan earned $40 less than Bob. Charles earned twice as much as Alan.

Set up an equation

Numerical Response

alan + B + C = 380

↳ B-40 ↳ 2A

Since Alan earned $40 then: alan 125 - 40 = $85

(B-40) + B + 2(B-40) = 380

B - 40 + B + 2B - 80 = 380

4B - 120 = 380 ⇒

4B = 380 + 120

4B = 500

B = $125

7. How much did Alan earn?

Answer: $ 85

(Record your answer in the numerical-response section on the answer sheet.)

Amy has already saved $50 toward the purchase of a new camera that has a total cost of $235. She earns the rest of the money she needs to buy the camera by babysitting her sister. Each time she babysits, she is paid $15.

a minimum of 12.3 ↑ 13

Numerical Response

Amy needs: $235 - $50 = $185

To figure out how many times she has to babysit → $185 / 15

What is the minimum number of times Amy must babysit her sister in order to earn enough money to purchase the camera?

Answer: 13 **times**

(Record your answer in the numeri

A piggy bank contains only quarters and nickels, and there is a total of 60 coins. The total value of the coins in the bank is $7.40.

0.25x + 0.05(60 - x) = 7.40

0.25x + 3 - 0.05x = 7.40

0.20x = 4.40

x = 4.40 / 0.2 = 22

Numerical Response

0.25x + 0.05y = 7.40

and x + y = 60 where x → # quarters, y → # nickels

↳ y = 60 - x

Substitute

1. How many quarters are in the piggy bank?

Answer: 22

Patricia wants to buy a new pair of ice skates that cost $250 including GST. She already has $86 she plans to use towards this purchase. She earns $10.25/hour at her part-time job.

Numerical Response

Patricia needs = 250 - 86 = $164

at $10.25 per hour

What is the minimum number of hours that she must work to save enough money to purchase the pair of ice skates?

Answer 16 **hours**

164 / 10.25 = 16 hours

Jennifer wants to buy a computer that costs $2 000, including all taxes. She will make a down payment of $500 and arrange to make 5 equal payments for the balance owing. ↳ constant

39. Which of the following expressions can Jennifer use to determine the amount of each of the 5 equal payments?

A. ($2 000 – 500) ÷ 5
B. ($2 000 – 500) × 5
C. ($2 000 × 5) – 500
D. ($2 000 ÷ 5) – 500

$500 is like a "flat fee"
• 2000 - 500 = $1500 in 5 payments
$\frac{\$1500}{5} = 30$

Emily's cellphone plan charges her $0.05 per text message, $0.06 per minute of voice usage and a $5.00 base fee each month.

Notice how many start with an initial amount... This is the constant

37. What is Emily's cellphone bill if she sent 33 text messages and talked for 47 minutes in one month?

A. $5.11
B. $6.65
C. $7.82
D. $9.47

constant
• flat fee → 5 + 0.05t + 0.06m
$ total: 5 + 0.05(33) + 0.06(47)
= 5 + 1.65 + 2.82
= $9.47

Rahim plants a tree in his yard and records its initial height. The height of the tree at the end of the first growing season is 1.3 times its initial height. In the second growing season, the tree grows 14.5 cm to reach a total height of 71.7 cm.

Numerical Response

What was the **initial** height of the tree in centimetres?

Answer: 44 cm

(Record your answer in the numerical-response section on the answer sheet.)

x → 1st season → 1.3x → 14.5 → 71.7 cm
1.3x + 14.5 = 71.7 cm
1.3x = 71.7 – 14.5
1.3x = 57.2
$x = \frac{57.2}{1.3}$
x = 44 cm

On a bike trip, Patrick rides at a constant speed of 14.4 km/h for $\frac{3}{4}$ of an hour and then at a constant speed of 13.2 km/h for $\frac{1}{3}$ of an hour.

28. How many kilometres in total did Patrick travel on the bike trip?

A. 15.2 km
B. 15.0 km
C. 14.7 km
D. 14.3 km

• $14.4 \text{ km/h} \times \frac{3}{4}\text{h} = \frac{43.2 \text{ km}}{4\text{h}} = 10.8 \text{ km}$
$13.2 \text{ km/h} \times \frac{1}{3}\text{h} = 4.4 \text{ km}$
total = 15.2 km