Reasoning and Problem Solving – Mixed Problems

1. Jardeen is an area manager. He has asked his store managers to offer discounts on pet food in their stores.

20% off SUPER SALE

Liverpool store

To…	jardeen@superstore.co.uk
Subject	Discounts

Hi Jardeen,

We're offering discounts of $\frac{1}{10}$ off all of our pet food.

Thanks,
Michelle, Store Manager, Bradford

Woofies
Was: £6
Now: £4.50

Halifax store

$\frac{1}{3}$ off **BIG** DISCOUNT **Sale**

Manchester store

I've only paid 70% for my Woofies compared to before the discount!

Customer, Leeds

Order the stores' discounts on Woofies pet food from lowest to highest.

2. Dennis has created this maths puzzle but has made five mistakes. Find and correct them. The arrows should not change.

1,000 1 10,000 100 10,000
10,000 1 1,000
10,000 1,000 1,000 1

$-15{,}640$ → Twenty-nine thousand, four hundred and sixty-three → $+170$ → 27,633

10,000 10 10
10

← $-41{,}400$ ← 51,003 ← $+24{,}000$ ← Twenty-seven thousand, four hundred and three ← $-1{,}230$

-540 → Nine thousand, four hundred and sixty-three → $+50$ →

1,000 1,000 1 1,000 1
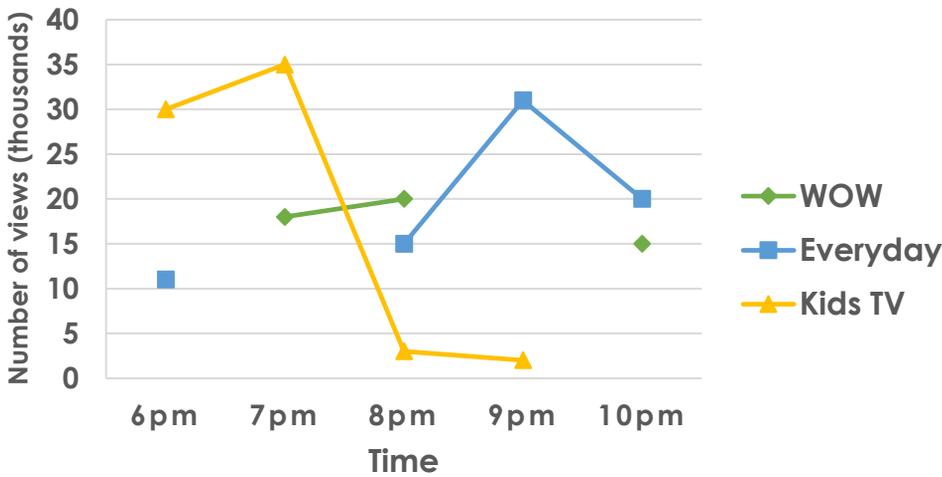100 100 1,000 1,000
1,000 1,000 100 1,000 10 1

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3. A production company gathered information about the viewing figures of their TV channels on a Thursday evening. The table shows the total viewing figures across the three channels.

TV Channel Viewing Figures

Time	Total viewing figures
6pm	56,000
7pm	67,000
8pm	
9pm	41,000
10pm	36,000

A. Fill in the missing parts of the line graph and table.
B. How many fewer people were watching WOW than Everyday at 10pm?
C. What could have happened at 9pm?

4. Darlene is a scientist and has measured the mass or capacity of some objects before and after a chemical reaction.

Object	Mass/capacity before	Mass/capacity after
Wax	600g	1.1lbs
Coal	1.5kg	3.7lbs
Sulphur	0.5lbs	250g
Water	2.6 pints	1.5L
Nitric acid	150ml	$\frac{1}{4}$ pint

Sort the objects into those which gained mass and those which lost mass/capacity.
Use 1 pint ≈ 568ml and 1kg = 2.2lbs.

Gained mass/capacity

Lost mass/ capacity

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5. Julie wants to go to the zoo with her family for her 7th birthday. The prices depend on their ages.

Ticket type	Price
Adult	£24.99
Junior (6-12 years)	£18.49
Infant (1-5 years)	£11.99
OAP (65 years +)	£22
Baby (< 12 months)	Free

Freddie
28 weeks

Polly
71 months

Jim
73 years

Henry
11 years 5 months

Jack
36 years

Archie
27 months

Sarah
86 months

Barb
38 years

Julie's mum, Barb, buys five of the tickets and spends £83.97. Whose tickets could she have bought?

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6. Wilma the witch orders ingredients to make potions.

Number of packs bought	Ingredient			
	Beetle wings (pack of 6)	Bee wings (pack of 8)	Snot (one 10ml bottle)	Frog legs (pack of 9)
1-11	£2	£2.30	£18	£38
12-23	£1.50	£1.90	£15.70	£35
24 or more	£1	£1.25	£12.30	£32

A. She needs 1,153 beetle wings, 185 frog legs and 106ml of snot for a potion. What is the least expensive way to buy the ingredients? Explain your answer.

B. She currently buys 9 packs of bees wings every month for a ritual. She thinks she could save over £50 a year if she bought the same number of beetle wings each month instead. Is she correct? Explain your answer.

Reasoning and Problem Solving – Mixed Problems – Year 5 Expected