

2023 GEP R2 MATH WEBINAR

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GEP Math Knowledge Points

Calculate	Word problem	Counting	Geometry	Number theory	Comprehensive
Whole number	Excess and shortage	Enumeration	Area	Digit value	Logical reasoning
Equivalent substitution	Worker problem	I-E Principle	Perimeter	Multiple	Number puzzle
Fraction	Chicken and rabbit	Pigeonhole principle	Angle	Odd and even	Pattern
Arithmetic sequence	S-D-M problem				Number matrix
	Calendar problem				Max or min
	Fraction problem				
	Working backwards				
	Planting				
	Age problem				
	Queuing problem				

Word problem- Excess and shortage

Features: Two plans

Method: Remaining changes \div Individual changes=Number of individuals

Alex got some sweets. He gives every friend 6, left 6. He gives every friend 9, one friend did not get any. How many friends does he have?

6 6 ... 6 6 left

0 9 ... 9 0

9 9 ... 9 9 needed

$$(6+9) \div (9-6) = 5$$

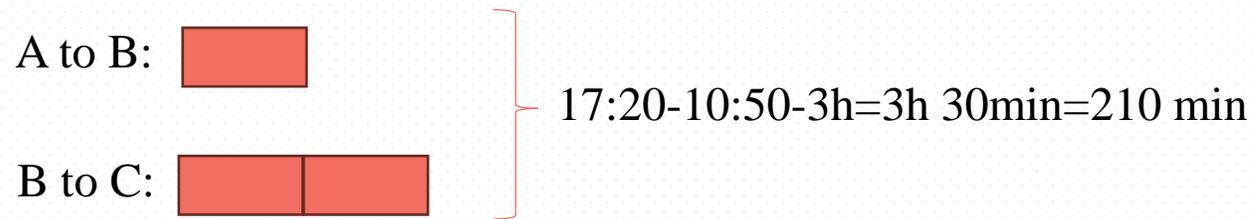
Ans: 5

Word problem- S-D-M problem

Features: Sum, difference, and multiple

Method: Based on the multiple drawing model, find 1u

A ship left port A at 10:50 a.m. and after it arrived port B it stayed for 3 hours. Then the ship went to port C and arrived at C at 5:20 p.m. on the same day. The time it travelled from port B to C was twice that from port A to B. What time did the ship arrive port B?

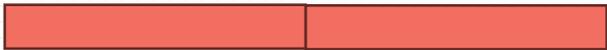


$$\text{A to B: } 210 \div 3 = 70 \text{ min}$$

$$10:50 + 70 \text{ min} = 12:00 \text{ p.m.}$$

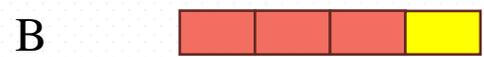
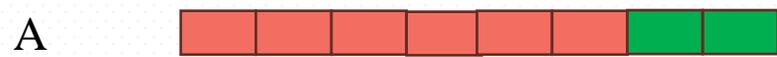
Ans: 12:00 p.m.

Both boxes A and B contain the same number of bottles. Each bottle in box A contains 1L of milk, while each bottle in box B contains 500ml of milk. If A and B exchange $\frac{1}{4}$ of the bottles, and A has 4L more milk than B, how many bottles does A have at first?

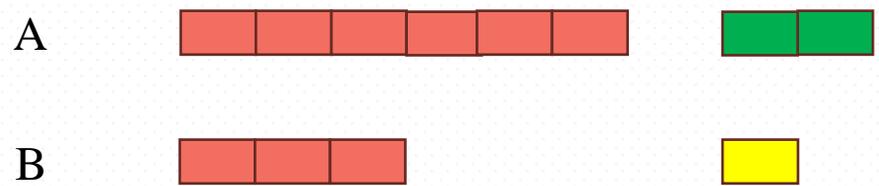
A 

B 

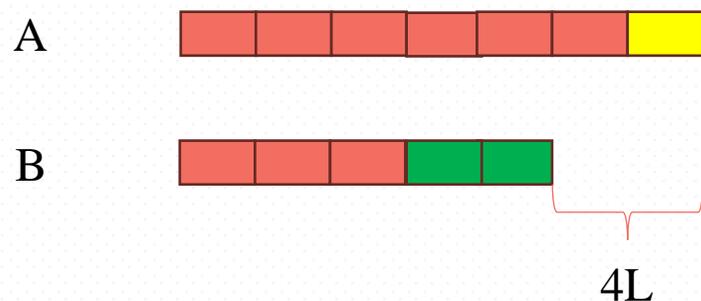
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$$4 \times 4 = 16\text{L}$$

$$16 \div 1 = 16$$

Ans: 16

Word problem- Calendar problem

Features: what day of the week... ?

Method: Total days $\div 7$. Count based on the remainder.

100 days after today is Saturday. What day of the week is today?

$$100 \div 7 = 14R2$$

R2	R1	R0
Thur	Fri	Sat

Ans: Thursday

Alex cleans the room every 4 days, Ben cleans the room every 5 days, and Cindy cleans the room every 6 days. On Saturday, they clean the room together for the first time. What day of the week will they clean the room together for the next time?

6:	6	12	18	24	30	60
5:	×	×	×	×	√	
4:						√

$$60 \div 7 = 8R4$$

R0	R1	R2	R3	R4
Sat	Sun	Mon	Tue	Wed

Ans: Wednesday

Word problem- Chicken and rabbit

Features: 2 total; 2 objects

Method: Make a list or assume.

A teacher gave out 89 pencils to 21 students in her class. Each boy received 3 pencils while each girl received 5 pencils. How many girls were there in the class?

boys	girls	pencils
1	20	$3 \times 1 + 5 \times 20 = 103$
	...	

Assume there are 21 boys

$$21 \times 3 = 63$$

$$89 - 63 = 26$$

$$5 - 3 = 2$$

$$26 \div 2 = 13$$

Ans: 13

Word problem- Worker problem

Features: several people several days/hours

Method: Try to find 1 person 1 day/hour. Find 1 person the same day/hour or the same people 1 day/hour.

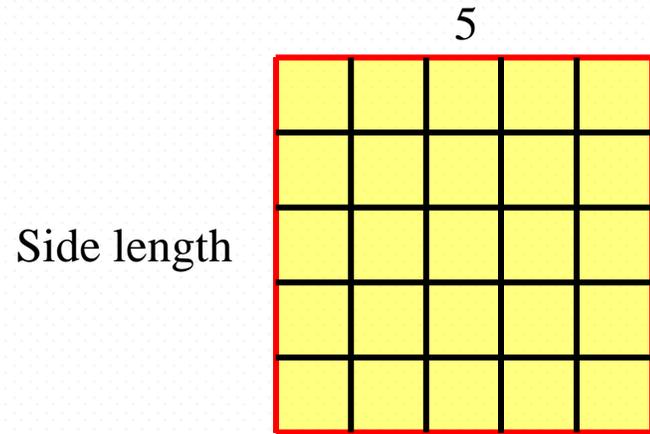
2 workers take 2 hours to sew 3 dresses, how many hours does it take for 4 workers to sew 9 dresses?

workers	hours	dresses
2	2	3
4	1	$3 \div 2 \times 2 = 3$
4	$9 \div 3 \times 1 = 3$	9

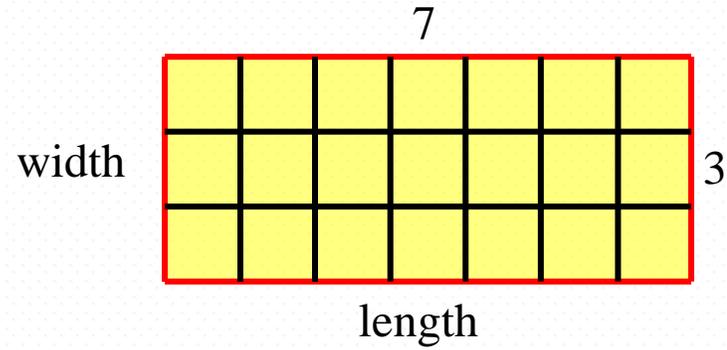
Ans: 3

Perimeter and Area

Square



Rectangle



Perimeter

$$5 \times 4 = 20$$

$$\text{Side length} \times 4$$

$$3 \times 2 + 7 \times 2 = 20$$

$$\text{length} \times 2 + \text{width} \times 2$$

$$\text{Or } (3+7) \times 2 = 20$$

$$\text{Or } (\text{length} + \text{width}) \times 2$$

Area

$$5 \times 5 = 25$$

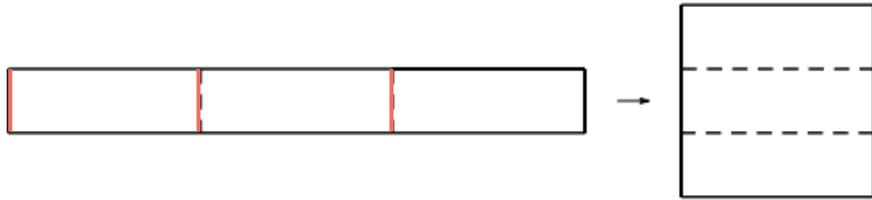
$$\text{Side length} \times \text{side length}$$

$$3 \times 7 = 21$$

$$\text{length} \times \text{width}$$

Perimeter and Area

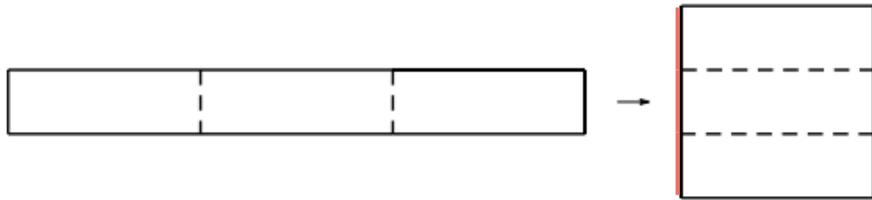
A rectangle of perimeter 60 cm is cut into 3 same pieces to form a square, as shown below. What is the perimeter of the square?



Perimeter and Area

Perimeter is twice the sum of length and width;
Find the multiple of the length and width through the figure.

A rectangle of perimeter 60 cm is cut into 3 same pieces to form a square, as shown below. What is the perimeter of the square?



$$\text{Length +width} \quad 60 \div 2 = 30 \text{ cm}$$

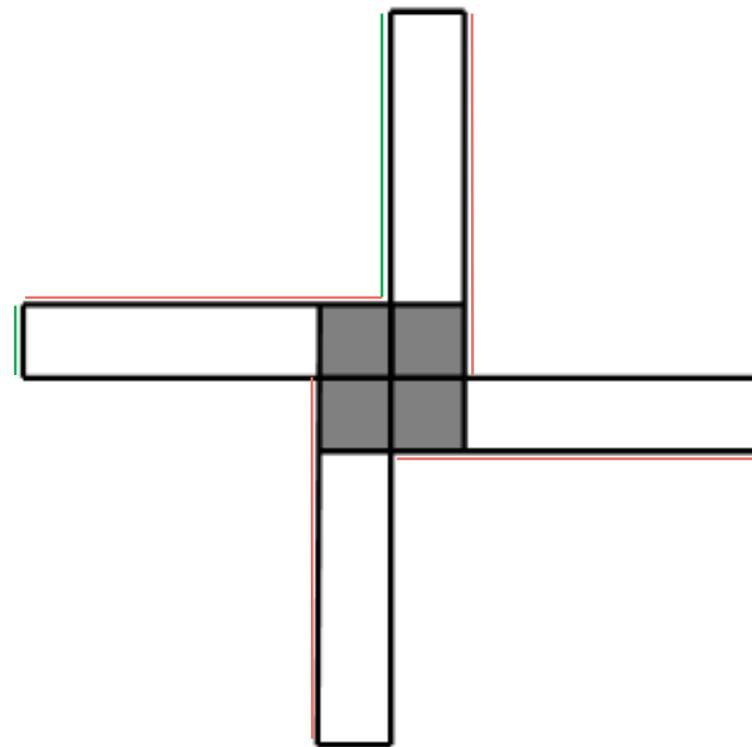
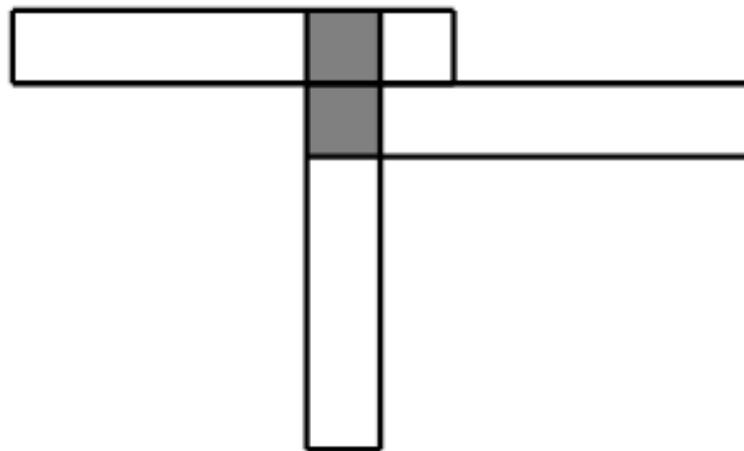
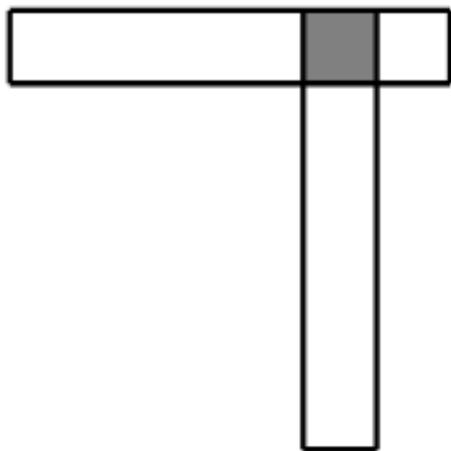
$$\text{width} \quad 30 \div (9+1) = 3 \text{ cm}$$

$$\text{Side length} \quad 3 \times 3 = 9 \text{ cm}$$

$$9 \times 4 = 36 \text{ cm}$$

$$\text{Ans: } 36 \text{ cm}$$

As shown in the figure, place four identical rectangles in sequence to obtain a "windmill shape". It is known that its perimeter is 40cm, and the area of the large square formed by the 4 overlapping parts is 4cm^2 , what is the perimeter of the original rectangle?



Length-width $40 \div 8 = 5$ cm $(5+1+1) \times 2 = 14$ cm

Width $4 = 2 \times 2$

$2 \div 2 = 1$ cm

Ans: 14 cm

Homework:

1. Redo questions
2. Explain the last question to your parents

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