

Number Nest Weekly Challenge



Warm up

1. True or false: $\frac{3}{7} = \frac{9}{21}$ **True** $\frac{9 \div 3}{21 \div 3} = \frac{3}{7}$
2. True or false: $2 \times 5\frac{1}{2} = 2 \times 5 + 2 \times \frac{1}{2}$ **True, both equal 11**
3. What is $265 \div 7$ to 2 decimal places? **37.86 to 2 d.p**
4. What is $398 - 787$? **-389**

Activity

1. Clyde cycles to school every day, he cycles at 4 m/s and takes 15 minutes to get to school. How far away is Clyde's home from school? Another day, he took 30 minutes to get to school. How fast did he cycle then?

15 minutes = 900 seconds

$4 \times 900 = 3600$ m, Clyde's home is 3600m from school

The other day, Clyde took double time to get to school so he must be two times slower than he usually is.

$4 \div 2 = 2$ m/s

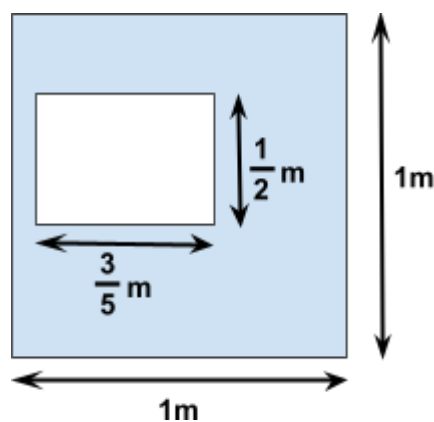
2. What is the area of the shaded region?

The area of the outer square is $1 \times 1 = 1$ m²

The area of the inner rectangle is $\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$ m²

So the area of the shaded region is:

$1 - \frac{3}{10} = \frac{7}{10}$ or 0.7 m²



3. If I count down from 2025 by first taking away 15 and then 26 and then 15 and then 26 and so on, what is the last positive integer I will reach?

This question can be solved by finding the remainder when 2025 is divided by (15+26)

$$2025 \div 41 = 49 \text{ r } 16$$

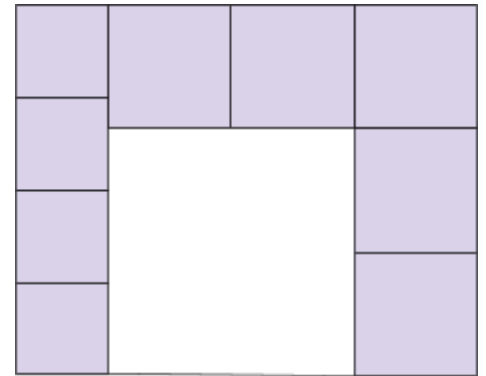
Since the next number to be taken away is 15 which is less than 16, the last positive integer reached must be $16 - 15 = 1$.

4. These purple boxes fit in a large rectangle, what is the ratio of the shaded area to the unshaded area?

4 small boxes has the same length as 3 large boxes, in other words, a small box is $\frac{3}{4}$ of a large box

If we let the side length of the large box to be 1, then the side length of the small box would be $\frac{3}{4}$.

Then the shaded area is $5 \times 1^2 + 4 \times (\frac{3}{4})^2 = 5 + \frac{9}{4} = \frac{29}{4}$, the unshaded area is $2^2 = 4$.



So the ratio of the shaded area to the unshaded area is $\frac{29}{4} : 4$, or $29 : 16$.

Puzzle

Place numbers 1 to 8 in the squares below so that each side adds up to the number in the middle.

2	4	6
7	12	5
3	8	1

6	1	8
2	15	4
7	5	3

There are other combinations that work for these two puzzles.