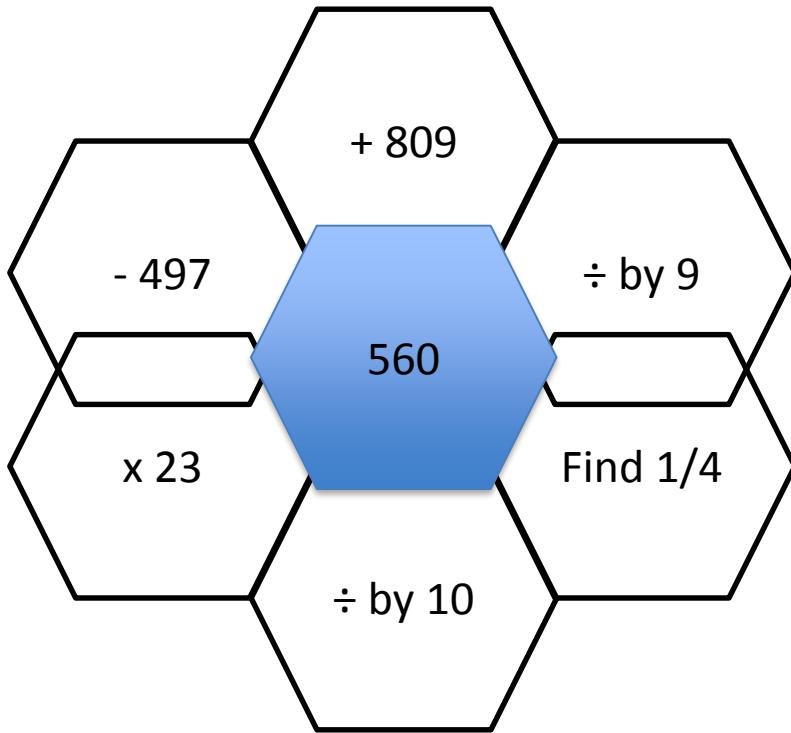


Recall



Here is a number written in Roman numerals

XVI

What is the number in figures?

George and Charlotte hire bikes.

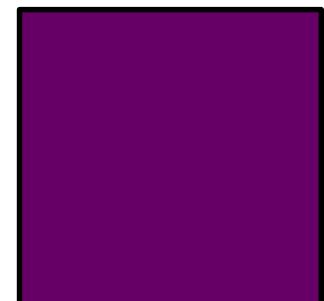
George has to return his bike by 4.00pm.
The time is now 3.20pm.
How many minutes has he got left?

Charlotte hires a bike for 45 minutes.
She takes the bike out at 2.30pm.
At what time must she return the bike?

The area of this square is 16cm^2 .

The square is cut into four small rectangles that are all identical.

What is the perimeter of one of the small rectangles?



Sam Lyod problems

Guided practice

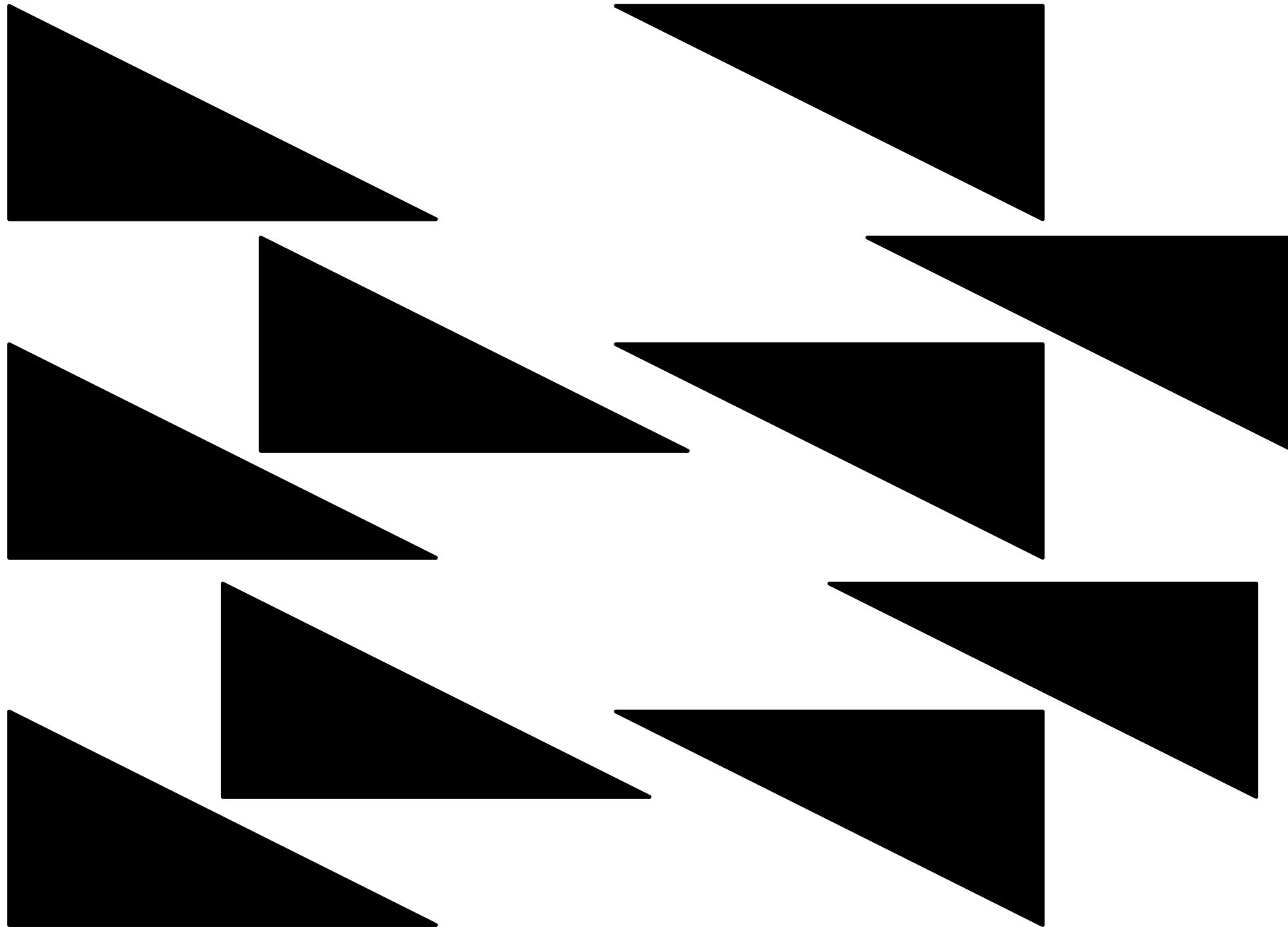
The Juggler

The clown after juggling with the five triangular pieces of cardboard to attract attention, proceeds to cut one of them into two pieces.

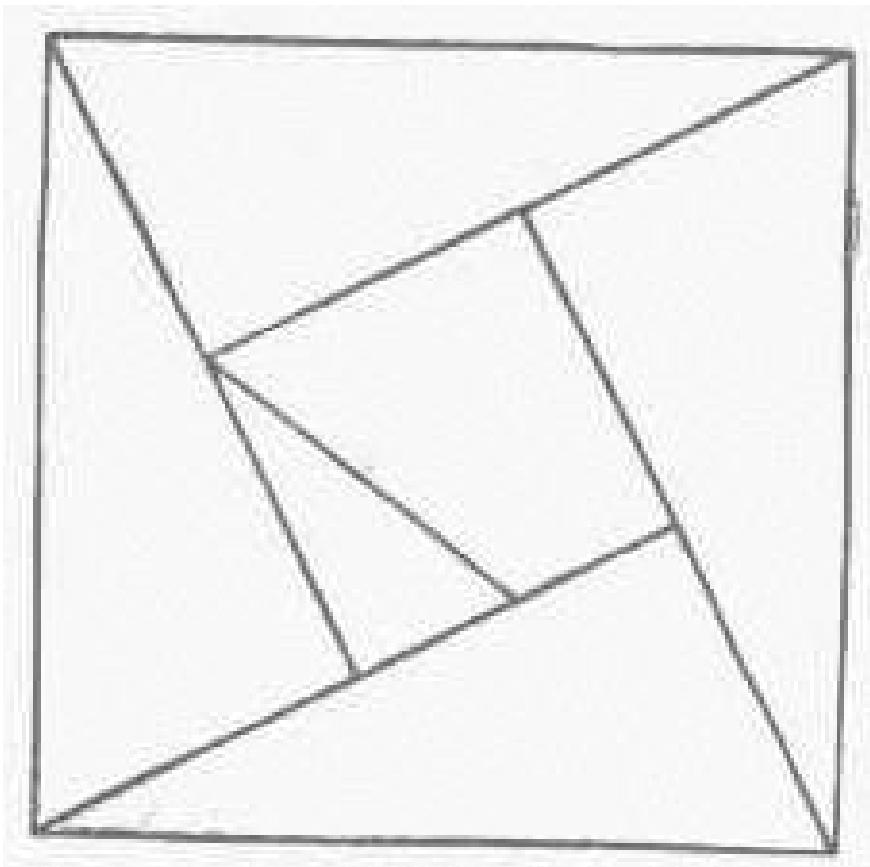
He then lays the six pieces upon the top of the box and shows that they will fit together and form a perfect square.

The pieces represent five right-angled triangles, say one inch high by two inches on the base, so you can readily cut five similar pieces from paper and then guess how to cut one of them so that the six pieces will form a perfect square.





Guided practice answers



Dive deeper 1



The Cat and Dog Race

Many years ago, when Barnum's Circus was of a truth "the greatest show on earth," the famous showman got me [Sam Loyd] to prepare for him a series of prize puzzles.

Barnum was particularly pleased with the problem of the cat and dog race.

"A trained cat and dog run a race, 100 feet straightaway and return. The dog leaps three feet at each bound and the cat but two, but then she makes three leaps to his two. Now, under those circumstances, which animal gets back first?"

Dive deeper 1 answers



Now, the cat wins, of course. It has to make precisely 100 leaps to complete the distance and return. The dog, on the contrary, is compelled to go 102 feet and back. Its thirty-third leap takes it to the 99-foot mark and so another leap, carrying it two feet beyond the mark becomes necessary. In all, the dog must make 68 leaps to go the distance. But it jumps only two thirds as quickly as the cat, so that while the cat is making 100 leaps the dog cannot makes quite 67.

Dive deeper 2

The Boys Age

It appears that an ingenious or eccentric teacher being desirous of bringing together a number of older pupils into a class he was forming, offered to give a prize each day to the side of boys or girls whose combined ages would prove to be the greatest.

Well, on the first day there was only one boy and one girl in attendance, and, as the boy's age was just twice that of the girl's, the first day's prize went to the boy.

The next day the girl brought her sister to school, and it was found that their combined ages were just twice that of the boy, so the two girls divided the prize.

When school opened the next day, however, the boy had recruited one of his brothers, and it was found that the combined ages of the two boys were exactly twice as much as the ages of the two girls, so the boys carried off the honours of that day and divided the prizes between them.

The battle waxed warm and on the fourth day the two girls appeared accompanied by their elder sister; so it was then the combined ages of the three girls against the two boys, and the girls won off course, once more bringing their ages up to just twice that of the boys'. The struggle went on until the class was filled up, but as our problem does not need to go further than this point, to tell the age of that first boy, provided that the last young lady joined the class on her twenty-first birthday. Now, guess the first boy's age.

Dive deeper 2 answers



The first boy is $3 \frac{1}{2}$ years old.

The first girl is $1 \frac{3}{4}$ years old.