2025
INTERNATIONAL
MATH CONTEST

Grades 3 and 4

IMC Practice Problems

Grade 3

Grade 4

2024: RSM Olympiad

IMC 2024 First Round

Grade 3

1. Twiggy made 75 tile bracelets to sell at the school fair. Buffy made 45 more than Twiggy. How many tile bracelets did Buffy make?

2. Jack the Carpenter has a log that is 32 meters long. He wants to cut it into 4-meter logs. How many cuts does he need to make if he can only cut one log at a time?

3. A digit is covered by the matches and a digit is covered by the birthday candles. Find the least possible three-digit number with all different digits.

4. A forgetful fairy cast 24 spells but forgot important words, so more than one-third of the spells failed. What is the greatest number of *successful* spells that the fairy could have cast?
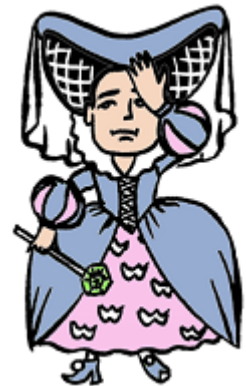
5. What is the greatest number of nuts that the squirrel could eat in this maze? (It cannot jump over the maze walls.)
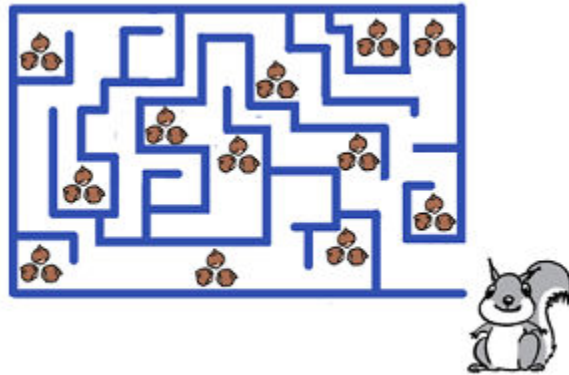
6. Kittens and ducklings are playing in the yard. There are 44 legs and 15 heads in all. How many kittens are playing if each kitten has 4 legs and each duckling has 2 legs?


7. Four friends live on a straight road as shown. Ashley's house is 550 meters from Saanvi's house and 750 meters from Carolyn's house. Mayumi's house is 500 meters from Carolyn's house. How far is Saanvi's house from Mayumi's house?
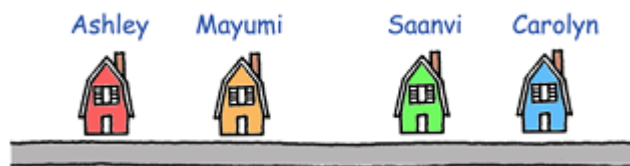
8. Emma and Yash made 60 snowmen. One-third of the snowmen have a red scarf, one-fifth of the rest of snowmen have no scarf, and all of the other snowmen have a green scarf. How many snowmen have a green scarf?

9. Two chocolate rabbits plus 4 ounces weigh the same as four chocolate frogs.
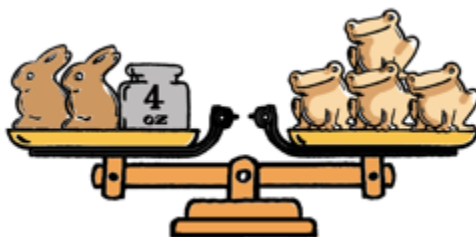
One chocolate rabbit and two chocolate frogs weigh 20 ounces.

How much does one chocolate rabbit weigh?

10. Each of the natural numbers from 3 to 7 is written on the other side of one of the cards below. The sum of the numbers on cards A and B is 9. The sum of the numbers on cards D and E is 9. And the sum of the numbers on cards B and C is 11. Find the least possible product of the numbers on cards A and E.

11. A rectangular magic window was 60 feet long and 45 feet wide. Then a not-so-graceful elf did a backflip and accidentally broke the magic window into rectangular pieces that are all the same size. Each piece measures 3 feet long and 2 feet wide. How many pieces are there?

12. John has 20 cards. The front of each card is either red or green, and the back of each card is either red or green. The number of green sides is three times the number of red sides. And there are 3 cards that have two red sides. How many cards have two green sides?

13. Peter and Piper have the same number of peppers. Peter put all of his peppers in his baskets with 18 peppers in each basket, except for his last basket which contains only 8 peppers. Piper put all of her peppers in her baskets, but she put 12 peppers in each basket, except for the last basket which contains only 8 peppers. How many peppers does Piper have if Peter and Piper have a combined total of fewer than 300 peppers?

14. Petunia is a cat lady who loves to wear a hat while she walks her cat. She has 7 cats and only walks one at a time. The cats are brown, gray, white, black, orange, spotted, and striped. Petunia has only 6 hats. They are gray, white, black, orange, spotted, and striped. If Petunia *never* matches her hat to the cat she is walking, how many cat/hat combinations are possible?

Answers

| Question No.	Answer
1	Buffy made 120 bracelets.
2	Jack the Carpenter needs to make 7 cuts.
3	The least possible three-digit number is 102.
4	The greatest number of successful spells is 15.
5	The squirrel can eat at most 18 nuts.
6	There are 7 kittens playing in the yard.
7	Saanvi's house is 300 meters from Mayumni's house.
8	There are 32 snowmen with a green scarf.
9	One chocolate rabbit weighs 9 ounces.
10	The least possible product of the numbers is 15.
11	There are 450 pieces now.
12	There are 13 cards that have two green sides.
13	Piper has 44 or 80 or 116 peppers.
14	There are 36 possible combinations.

2023: RSM Olympiad

IMC 2023

Grade 3

1. What number is covered?

$$85 + \boxed{} = 115$$

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2. Katia invited 30 friends to watch her backyard gymnastics show. She set up 3 rows of chairs with 6 chairs in each row. How many more chairs does Katia need to set up if each friend must be seated?

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3. Molly started to climb the steps of the Old Tower. She took 20 steps, which is one-fourth of all the steps. How many steps does the Old Tower have?
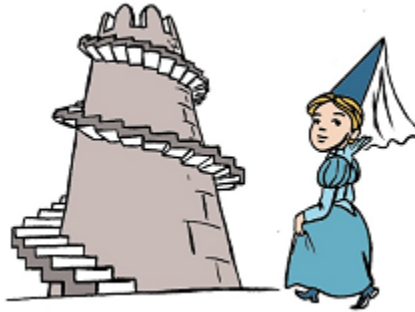
4. A store can print your soccer team's name on 12 t-shirts in 10 minutes. You want to buy 24 t-shirts. How long will it take the store to print all 24 t-shirts if the t-shirts are always printed at the same rate?

**5.** What is the least three-digit number with all different odd digits?

6. Albert the Monkey found a bunch of coconuts and put them into two equal piles. Then he moved 3 coconuts from one pile to the other, so now the number of coconuts in the second pile is twice the number of coconuts in the first pile. How many coconuts did Albert find?

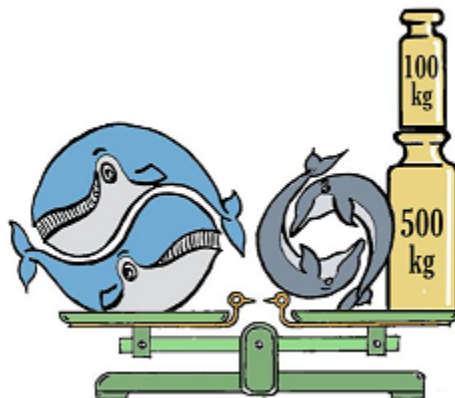**7.** The figure below is made of four 1-inch × 1-inch squares. What is the perimeter of the figure?
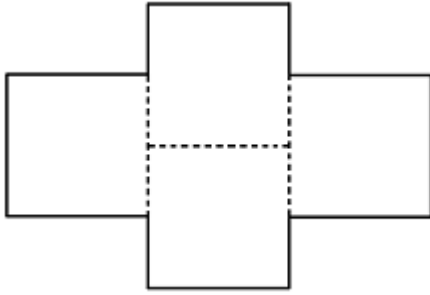
8. A rectangular garden has a square pond in the middle as shown in the picture. If each side of the pond is 6 feet long, what is the area of the land around the pond?
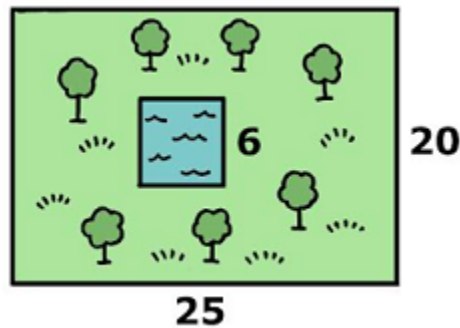

9. How much more does a whale weigh than a dolphin?

10. Four fairies made a total of 120 gifts for a party. The first fairy made one-third of the gifts and the second fairy made 28 gifts. The third fairy and the fourth fairy made an equal number of gifts. How many gifts did the fourth fairy make?

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11. If Masha buys three roses she will have 7 dollars left. To buy nine roses, Masha will need to borrow 11 dollars from her father. How many dollars does Masha have?

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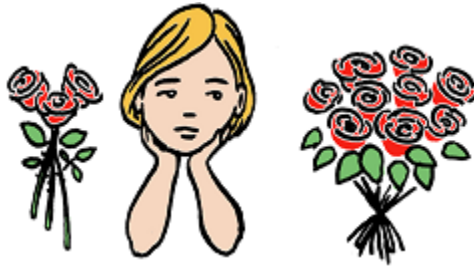
12. A line of people are waiting for a store to open because there is a big sale today. But while the manager is looking for his keys, another person squeezes in between every two people in the line. Now 31 people are in the line. How many people were initially in the line?

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13. There are 210 bakers in the Big Cake Competition. The number of bakers who can make a red velvet cake is twice the number of bakers who can make a carrot cake. The number of bakers who can make both types of cake is 30 more than the number of bakers who cannot make either. How many bakers in the competition can make a red velvet cake?

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14. Eleven pirates and their captain found a treasure chest full of gold coins. They tried to divide all of the coins equally, but they had one coin left. Then the captain took 20 coins for himself and he was able to divide the rest of the coins equally among the eleven pirates. What is the least possible number of gold coins in the chest?

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Question No.	Answer
1	The covered number is 30.
2	Katia needs to set up 12 more chairs.
3	The Old Tower has 80 steps.
4	It will take 20 minutes.
5	The least three-digit number with all different odd digits is 135.
6	Albert the Monkey found 18 coconuts.
7	The perimeter of the figure is 10 inches.
8	The area of the land around the pond is 464 square feet.
9	A whale weighs 300 more kilograms than a dolphin.
10	The fourth fairy made 26 gifts.
11	Masha has 16 dollars.
12	There were 16 people in the line.
13	There are 160 bakers who can make a red velvet cake.
14	The least possible number of gold coins is 97.

2022: RSM Olympiad

Grade 3

1. What number is covered by the pencil?

$$222 - \boxed{} = 202$$
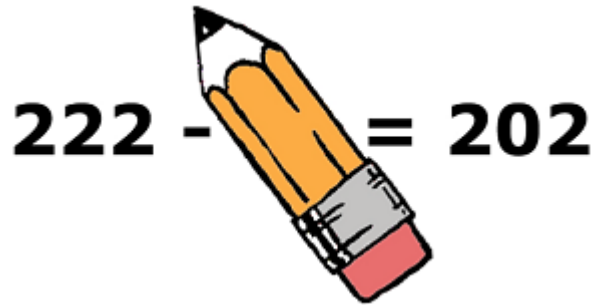
2. Derek counts 15 peacocks at the zoo. A zookeeper told Derek that this is one-third of all the peacocks in the zoo. How many peacocks are in the zoo?
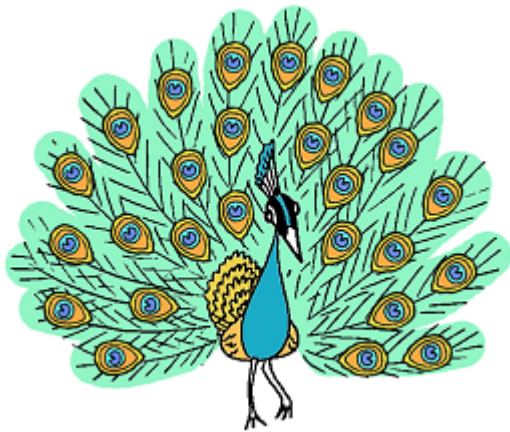
3. Cecilia arranged all of her coins and two red buttons into the shape of a square. How many coins are blocked from view by Cecilia?


4. Michael wrote the least two-digit number. Lina wrote the greatest two-digit number. Karl added these two numbers. What number did Karl get?
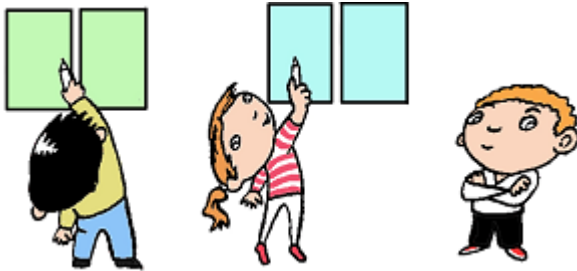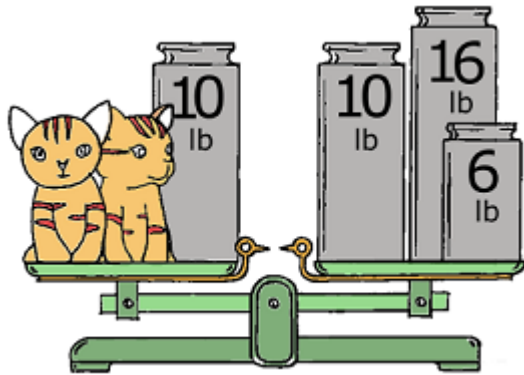

5. Mary made 28 Valentine cards, and John made fewer than half as many cards as Mary. What is the greatest possible number of cards they made in total?

6. There are 3 squares in the figure. The side length of the smallest square is 6 cm. What is the side length of the largest square?

3 cm

3 cm

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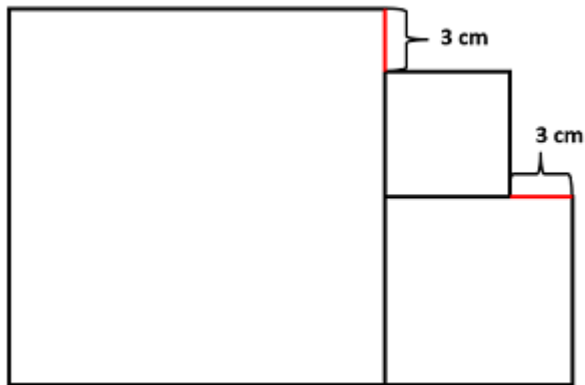
7. How much does one kitten weigh? The kittens weigh the same amount.

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8. Steve found a treasure map that shows a stone, tree, hill, and flag at the corners of a rectangle. Steve started at the stone, took some number of steps to the oak tree, then to the flag, and then to the grassy hill. He marked the grassy hill and then returned to the stone in 22 steps. If he took a total of 120 equal steps, how many steps did Steve take from the stone to the oak tree?
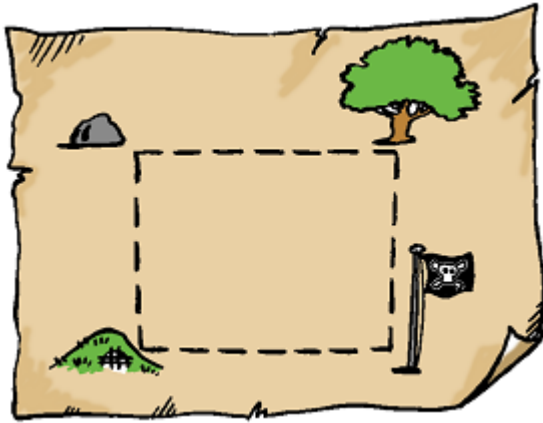
9. An unfortunate cook made a few pancakes. One-fourth of all the pancakes were stolen by a cat. Then 4 pancakes were eaten by a parrot while the cook tried to catch the cat. Now, the cook has 32 pancakes. How many pancakes did the cat steal?
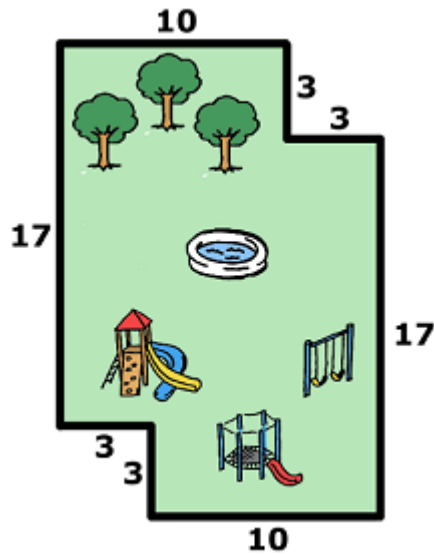

10. Aubree and Robert met in the school parking lot this morning. Aubree counted all the bicycles and cars in the lot. She counted 30 in all. Robert counted all the wheels and got 72. How many bicycles are in the lot?

11.

Find the area of the park.

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12. Peter took three photos. The photos show a total of 44 birds. The second photo has 9 fewer birds than the first photo. The third photo has 5 more birds than the first photo. How many birds are in the first photo?

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13. A chest contains 5 balls that each have the number 3 written on them. The chest also contains 5 balls that each have the number 7 written on them, and 5 balls that each have the number 11 written on them. Octi the Octopus takes out a few balls, one at a time, and calculates the sum of the numbers written on them. How many different sums less than 15 are possible?
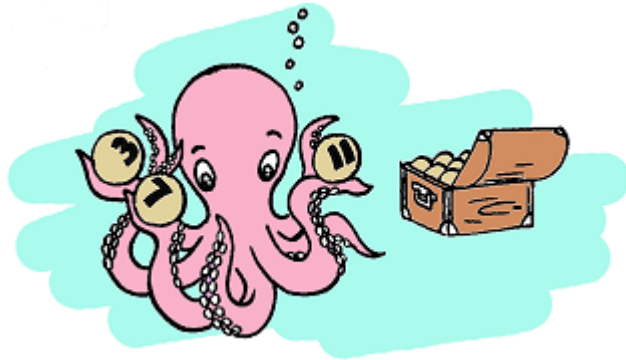
14. A train full of giraffes and rabbits goes to a resort. In every train car, there are either 25 giraffes or 45 rabbits. The total number of giraffes on the train is equal to the total number of rabbits on the train. What is the least possible number of train cars if there are more than 500 animals on the train?
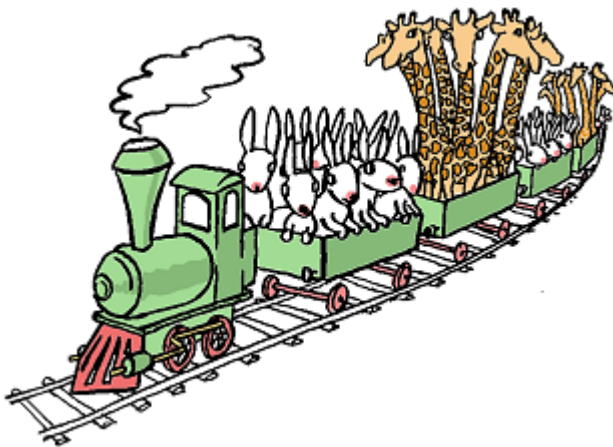
| Question No.	Answer
1	The covered number is 20.
2	There are 45 peacocks in the zoo.
3	5 coins are covered.
4	Karl got 109.
5	The greatest possible number of Valentine cards is 41.
6	The side length of the largest square is 18 cm.
7	One kitten weighs 11 lb.
8	Steve took 38 steps from the stone to the oak tree.
9	The cat stole 12 pancakes.
10	There are 24 bicycles in the lot.
11	The area of the park is 242 square units.
12	There are 16 birds in the first photo.
13	6 or 9 different sums less than 15 are possible.
14	The least possible number of train cars is 28.

IMC 2021

Grade 3

1. What number is covered?

$$170 - \boxed{} = 95$$

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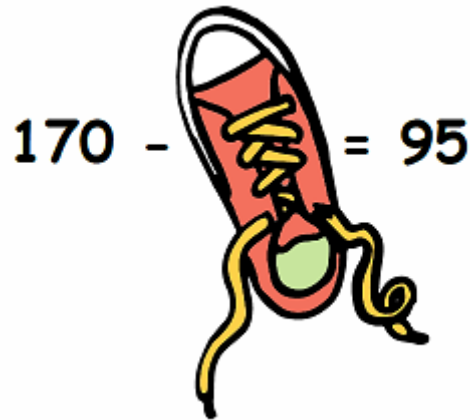
2. What is the smallest possible three-digit number with all different digits?

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3. Flavor Fast won 12 races, which is one-third the number of races that Slow Stue won. How many races did Slow Stue win?

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4. How much does one puppy weigh?
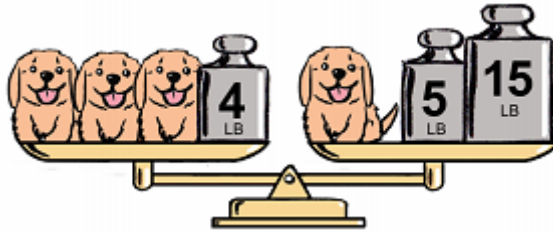
5. Noah bought a rectangular frame with perimeter 30 cm. But then Noah measured the soccer certificate he wants to put in the frame and realized that the frame should be 4 cm longer. What should be the perimeter of the new frame Noah must buy?


6. Temper Tantrum is learning how to play music! So far, he has broken 84 musical instruments: a few guitars, twice as many banjos as guitars, and 48 pianos. How many banjos has Temper broken?

7. Yien and Toni are at an escape room and need to unlock a treasure chest. The girls need to subtract a mystery number from 533 and get 255 as the difference. What is the mystery number?

8. John has two boxes. One box has 88 spiders. The second box has 44 spiders. Every day, John moves two spiders from the first box to the second box. In how many days will the number of spiders in the boxes be equal?
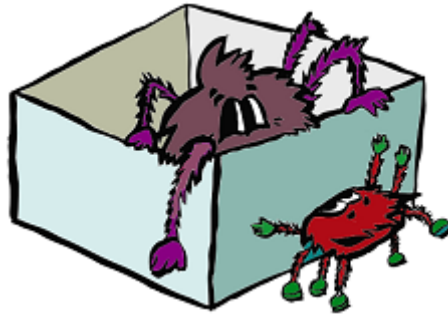
9. Andy wrote a two-digit number. He said the following:
a) The sum of the digits is greater than 14.
b) The sum of the digits is less than 14.
c) The sum of the digits is 15.
d) The number has 7 at the end.
But one sentence is false. What two-digit number did Andy write?

10. The school band wants to put on a giant show. They will split the field behind the school into 10 ft by 10 ft squares, and three band members will stand on each square. If the field has length 100 ft and width 40 ft, how many band members will stand on the field?
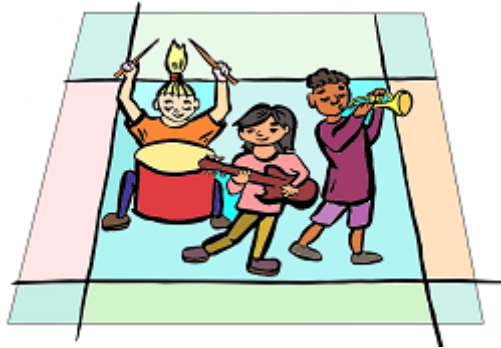

11. Jackie played a few chess games last night. She started at 5 : 15 pm. She played each game for exactly 10 minutes and took a 5 minute break after each game. If she finished playing the last game at 7 : 55 pm, how many games did Jackie play?

12. Six chipmunks try to divide their acorns evenly, but have 5 acorns left. Then a seventh chipmunk arrives and adds 1 acorn to the pile. Now, the 7 chipmunks can evenly divide all the acorns. What is the smallest number of acorns that could be in the pile after the seventh chipmunk adds his acorn?

13. Participants in a darts tournament get 5 points if they hit the red circle, 1 point if they hit the blue circle, and no points if they miss both circles. Each participant has 4 darts. How many different scores are possible if everyone gets at least one point?

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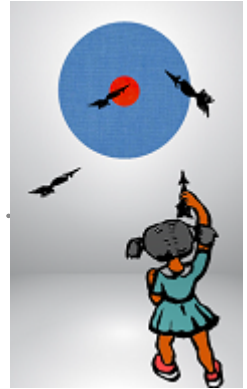
14. Andy and Bob took a test that had 120 problems. Andy got 30 more problems correct than Bob. The number of problems that only Andy got correct is six times the number of problems that both boys got correct. There are 20 problems that neither boy got correct. How many problems did both boys get correct?

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| Question No.	Answer
1	The covered number is 75.
2	The smallest three-digit number with all different digits is 102.
3	Slow Stue won 36 races.
4	One puppy weighs 8 pounds.
5	The perimeter of the new frame should be 38 cm.
6	Temper Tantrum has broken 24 banjos.
7	The mystery number is 278.
8	The number of spiders in the boxes will be equal in 11 days.
9	Andy wrote 87.
10	There will be 120 band members on the field.
11	Jackie played 11 games.
12	The smallest number of acorns the chipmunks could have is 42.
13	There are 14 different scores possible.
14	There are 10 problems that they both got correct.

IMC 2020 Grade 3

1. What number is covered?

$$- 65 = 85$$

2. There are 16 giant sloths in Wobegone Wood, which is one-fourth the number of giant sloths in Fairy Forest. How many giant sloths are in Fairy Forest?

3. A young wizard got 16 baby dragons for her birthday. Then more than half of the baby dragons flew away. What is the greatest number of baby dragons the young wizard could have now?
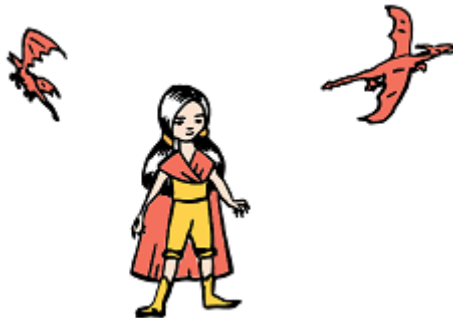
4. Tycho drew a 7 × 5 rectangle but then his puppy, Mishka, ate part of it! The rectangle has been ripped, but some green aliens and yellow smiley faces remain. Use the pattern to decide how many yellow smiley faces Tycho drew on the original rectangle.
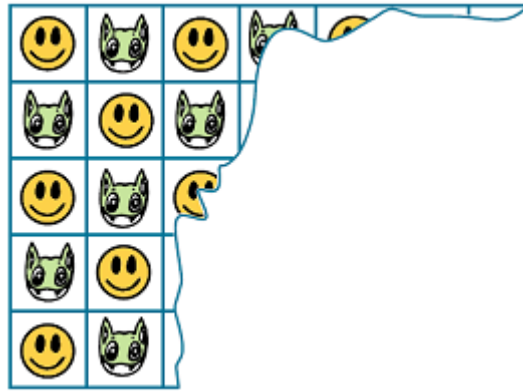
5. A watermelon, half a watermelon, and some weights are placed on the scale as shown. The scale is balanced. Find the weight of one watermelon.
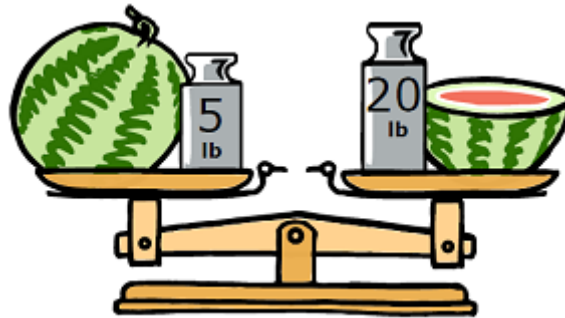
6. Giselle thought of a number. When she subtracts her number from 731, the result is 137. What is Giselle's number?

7. A square-shaped piece of paper is folded twice, as shown. The perimeter of one of the new squares is 24 cm. What is the perimeter of the unfolded paper?

8. Peter-The-Two-Year-Old-Terror has had 60 babysitters. One-fifth of his babysitters have quit, 8 babysitters have been fired, and the rest of his babysitters have just run screaming down the street. How many babysitters have run screaming?

9. ABC is a three-digit number where each letter represents a different digit. If A < C, what is the greatest possible number?

10. Alice, Becky, and Carl bought a total of 88 balloons. Alice bought 10 more balloons than Becky, while Carl bought 12 balloons. How many balloons did Alice buy?

11. Fifteen hungry kittens found a bucket of sausages. Each time they cut a sausage or a part of a sausage, they cut it into exactly two new pieces. They made 20 cuts in all and each kitten got 2 (maybe unequal) pieces of sausage. How many sausages were in the bucket?
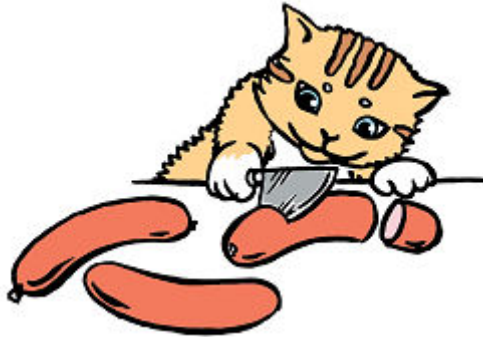
12. Find the area of the park.
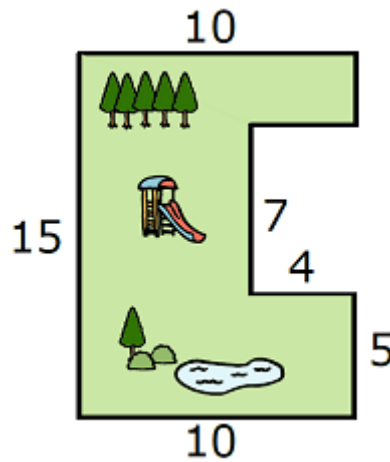
13. If Pirate Jack splits all of his coins into 7 equal piles for his parrots, he has 4 coins left. Or, if he splits all of his coins into 11 equal piles for his shipmates, he has 4 coins left. Assuming every pile has at least 1 coin, what is the least possible number of coins Pirate Jack has?

14. All 210 students in a school went roller skating, to a water park, or both. The number of students who went only to the water park is four times the number of students who went only roller skating. The number of students who went only to the water park is two times the number of students who did both. How many students did both?

Answers

Question No.	Answer
1	The covered number is 150.
2	There are 64 giant sloths in the Fairy Forest.
3	The greatest number is 7.
4	Tycho drew 18 yellow smiley faces on the original rectangle.
5	One watermelon weighs 30 lb.
6	Giselle's number is 594.
7	The perimeter of the unfolded paper is 48 cm.
8	40 babysitters have run screaming.
9	The greatest possible number is 879.
10	Alice bought 43 balloons.
11	There were 10 sausages in the bucket.
12	The area of the park is 122 square units.
13	The least possible number of coins is 81.
14	60 students did both.

IMC 2019 Grade 3

1. How much does one puppy weigh?

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2. What number is covered?

$$- 80 = 180$$

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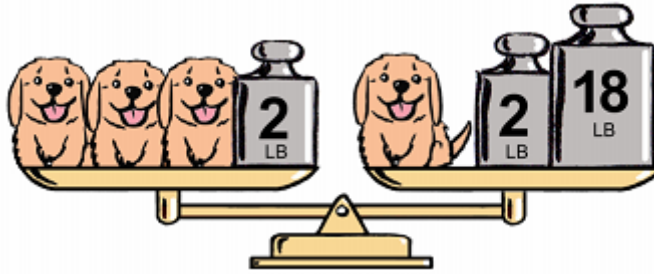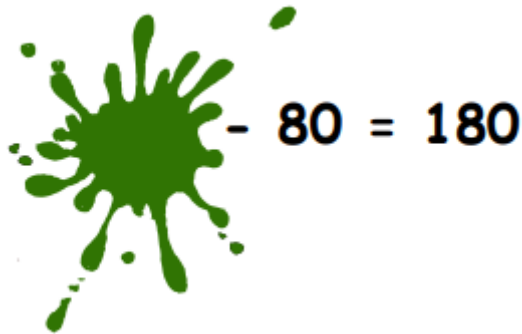
3. John and Mary are building towers out of lego bricks. John used fewer than 18 bricks for his tower. Mary used twice as many bricks as John. What is the greatest number of bricks Mary could have used?


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4. Yesterday, Peter the Rabbit picked 84 carrots from his garden and ate one-fourth of them. Today, he ate 12 carrots. How many carrots are left?

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5. What is the smallest possible 3-digit number, whose sum of digits is equal to 10?

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6. Andrew walks from his house to Becky's house which is 150 meters away. Then, they walk together to pick up Charles at his house. Lastly, the three friends walk to the ice cream shop. If Andrew walked 650 meters in all, how far is Becky's house from Charles' house?

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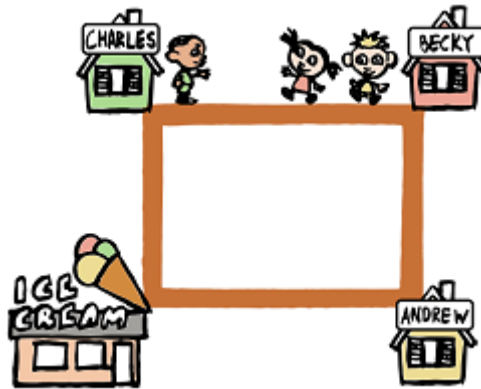
7. A monkey lives on a banana farm, where the trees are 3 meters apart. Sitting on her favorite tree, she eats 8 bananas, then jumps to the next tree. On each new tree, the monkey eats one less banana than she did on the previous tree. She stops to nap on the tree where she ate only one banana. What is the total distance jumped by the monkey?

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8. The Three Little Pigs are building a new brick house to hide from the Big Bad Wolf. First, Oinky Pig brought 48 bricks, which is two thirds of the total bricks they needed. Pinky Pig brought half of the rest of the bricks they needed. How many bricks did Squeaky Pig bring?
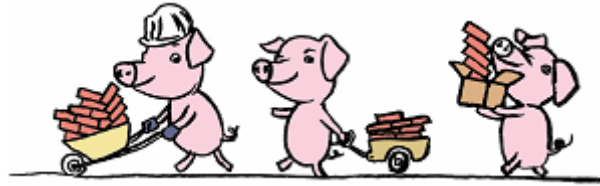
9. The figure is made from five equal squares. If the perimeter of the figure is 72 units, what is the area of one square?
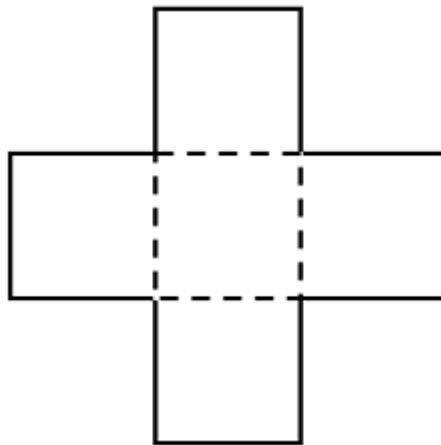
10. Jack's favorite number is 836. Jill subtracts a secret number from 836 and her answer is the smallest possible combination of all the digits from Jack's favorite number. What is the secret number?

11. Alice and Bob were digging for dinosaur eggs. By the end of the day, they found a total of 104 eggs. Alice found 22 more eggs than Bob. How many dinosaur eggs did Alice dig up?

12. A princess wants to tile her bedroom floor with squares. Her bedroom floor is 15 feet long and 10 feet wide. The squares' sides are all 1 ft long. To make each square, she uses 2 striped and 2 solid triangles as shown. She already has all the solid triangles she needs. How many striped triangles should the princess buy?
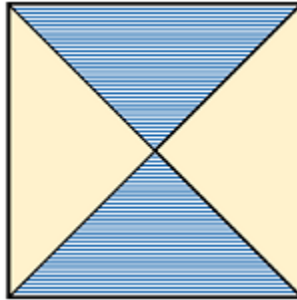
13. In a school one-third of all 240 students play soccer. Forty four students play both soccer and basketball and sixty students do not play any of these games. How many students play only basketball?

14. An equal number of giants and trolls go on a cruise. On each ship there are either 36 giants or 81 trolls. What is the smallest possible number of ships?

Answers

| Question No.	Answer
1	One puppy weighs 9 pounds.
2	The covered number is 260.
3	The greatest possible number of lego bricks that Mary could have used is 34.
4	51 carrots are left.
5	The smallest three-digit number with the sum of its digits equal to 10 is 109.
6	There are 350 meters between Becky's house and Charles' house.
7	The monkey jumped 21 meters.
8	Squeaky Pig brought 12 bricks.
9	The area of one square is 36 square units.
10	The secret number is 468.
11	Alice dug up 63 eggs.
12	The princess should buy 300 striped triangles.
13	100 students play only basketball.
14	The smallest possible number of ships is 13.

Grade 3

IMC 2018

1. What number is covered?
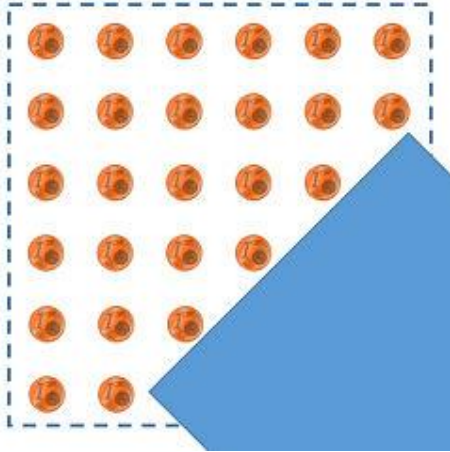
$$160 - \text{\_\_} = 60$$

2. How many cuts does Bobby make to split his brother's favorite fishing rod into 3 pieces?

3. How much does one bunny weigh?
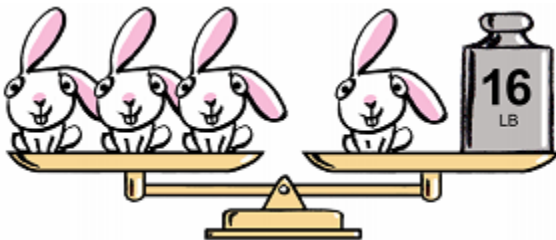
4. Coins were arranged in a square. How many coins are covered?

5. What number is the difference between the smallest three digit number and the largest one digit number?

6. On Monday morning, a puppy weighed 11 pounds. The puppy's owner weighs him twice a day. The puppy loses 1 pound by every evening, and gains 3 pounds by every morning. How many pounds will the puppy weigh by Thursday evening of the same week?

7. Three bears cooked 92 pounds of porridge. Baby Bear ate 12 pounds of it, then Mama Bear ate one-fourth of the porridge that was left. Papa Bear finished the rest. How many pounds of porridge did Papa Bear eat?

8. Usually Mary drives to grandma's house in a straight line. But today, she saw a "Detour" sign and had to turn left and drive for 4 miles, then take a right and continue, then take another right and drive until she got there. This detour was 24 miles long. How far, in miles, is Mary's usual drive to grandma's house?
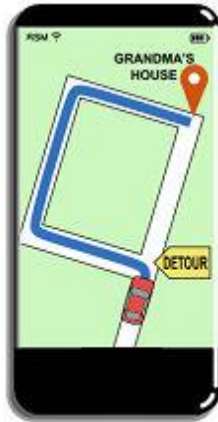

9. Winnie-the-Pooh had only one full jar of honey left. The other jars were empty. Trying to find the full jar, Winnie broke one-third of his empty jars. Now, he has 37 jars left (one of them is full of honey). How many jars did he break?

10. A locked box has three digits written on it: 5, 2, and 7. A spy subtracts a Secret Number from the biggest number he can make with those three digits. He gets a difference of 179, which opens the box! What is the Secret Number the spy uses?

11. Find the area of the park.
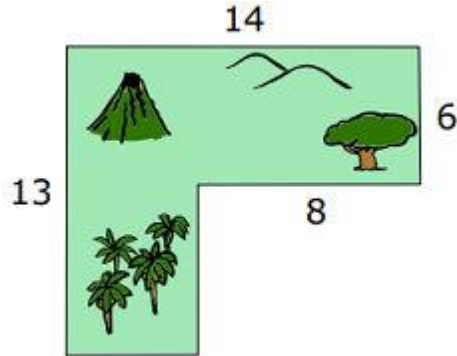
12. There were 84 more frogs in Green Pond than in Blue Pond. All the frogs from Blue Pond jumped into Green Pond. Now the total number of frogs in Green Pond is 160. How many frogs were there originally in Green Pond?

13. Bailey is making festive cookie bags. She tried to split all her cookies evenly by putting 15 per bag, but the last bag had only 14 cookies. So, she tried putting 10 cookies per bag, but the last bag had only 9. Her mom brought 2 more cookies. Now, Bailey tries 9, then 8, cookies per bag, but she can't do it. Finally, Bailey puts 7 cookies in each bag evenly! What is the least possible total number of cookies?

14. There were two competitions in a puzzle tournament. The Sudoku competition had twice as many participants as the Crossword competition. If 170 people competed overall, and 40 of them participated in both competitions, how many people participated in the Sudoku competition?

Answers

Question No.	Answer
1	100
2	2 cuts
3	One bunny weighs 8 lbs.
4	10 coins are covered.
5	The difference is 91.
6	The puppy will weigh 16 pounds by Thursday evening.
7	Papa Bear ate 60 pounds of porridge.
8	Mary's usual drive to grandma's house is 16 miles.
9	Winnie-the-Pooh broke 18 jars.
10	The spy uses the number 573.
11	The area of the park is 126 square units.
12	There were 122 frogs in Green Pond, originally.
13	The least possible total number of cookies is 91.
14	There were 140 participants in the Sudoku competition.

Grade 3: IMC 2017

1. Two kittens and some weights are sitting on the scale. The scale is balanced. How much does one kitten weigh?

2. What is the greatest possible 3-digit number, whose sum of digits is equal to 13?
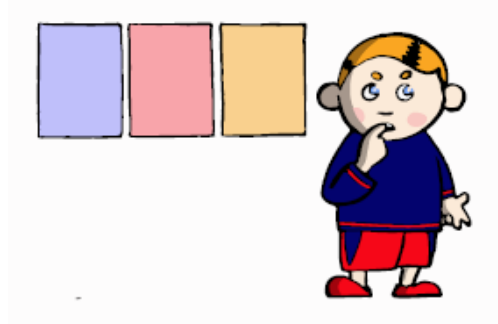
3. There were 30 candies in a box. John ate 5 candies. Julia ate more than 3 but less than 9 candies. What is the greatest possible number of candies that are left in the box?


4. Two butterflies covered the same digit. Find this digit.

$$1\;0 + 1\;\;+ 1 = 1\;7\;7$$

---

5. Ben filled one-third of a bottle with 12 ounces of orange juice. How many ounces of orange juice will the bottle contain when it is full?

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6. Workers started to build a fence around a playground. They already built 115 feet of the fence and a gate that is 10 feet in length. How many more feet of fence do the workers need to build in order to finish?

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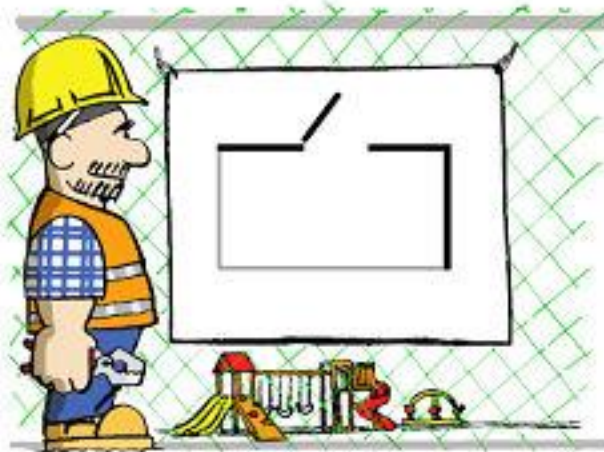
7. Anna used some 1 × 2 LEGO bricks to cover an entire 6 × 10 LEGO building plate. How many LEGO bricks did she use?
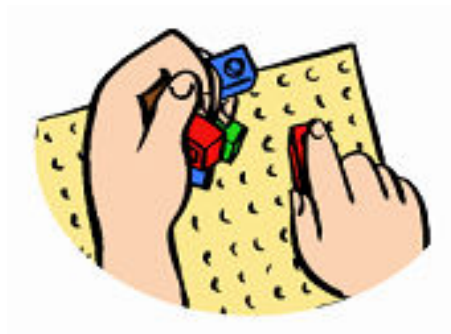
8. The first letter for Harry arrived at 8 : 05 p.m. and the last letter arrived at 8 : 35 p.m. If one letter arrived each minute, how many letters arrived for Harry?


9. A secret room has the number 458 on its door. When a mystery number is subtracted from this number, the result is the code to open the door. If the code to open the door is 185, what is the mystery number?
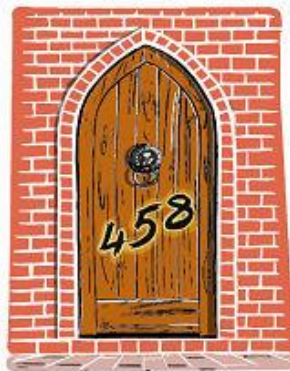
10. A young dolphin visited her grandma who lives 54 miles away. On the first day, she swam one-third of the way. On the second day, she swam 12 miles. On the third day, she swam the rest of the way. How many miles did she swim on the third day?

11. The figure is made from three equal squares. If the area of one square is 100 square units, what is the perimeter of the figure?
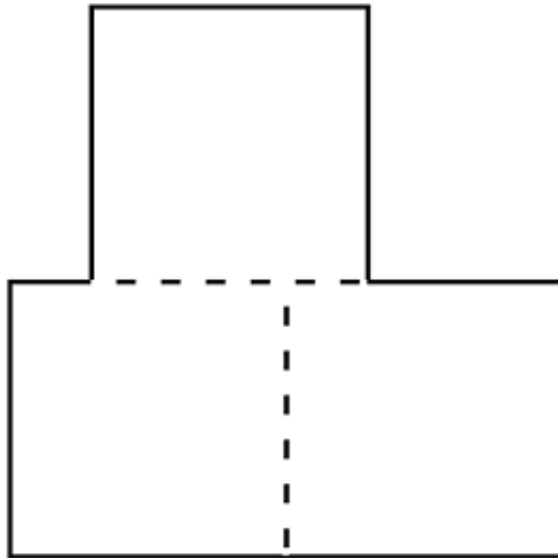
12. The teacher wrote two numbers on the board. Eric added the numbers and got 58. Olivia subtracted the second number from the first number and got 28. What is the first number the teacher wrote on the board?

13. In a school, half of the 300 students saw *Zootopia*, 180 students saw *Finding Dory*, and 40 students did not see either movie. How many students saw both movies?

14. Each day, the Royal Chocolate Master puts all of the candies he makes in boxes with the same number of candies in each box. Today the Queen wants him to put 30 candies in each box, but the King wants 25 candies in each box. The Chocolate Master has already made 70 candies. What is the smallest number of candies he still needs to make so that all of the candies can be put into boxes, each with either the Queen's or the King's desired number of candies?

Answers

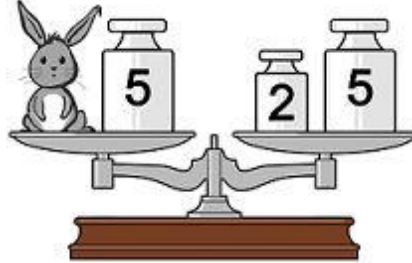| Question No.	Answer
1	4 pounds
2	940
3	21
4	6
5	36 ounces
6	125 feet
7	30 bricks
8	31 letters
9	273
10	24 miles
11	80 units
12	43
13	70 students
14	80 candies

Grade 3: IMC 2016

1. A bunny and some weights are sitting on the scale. The scale is balanced.

   How much does the bunny weigh?

2. What is the largest possible 3-digit number with all different digits?

3. Anna had 10 dolls. She gave Lisa more than 5, but not all, of her dolls. What is the largest number of dolls Anna can have now?

4. Faye spilled juice on her math homework. A number in one of her math problems is covered by the juice. What is that number?

   $- 40 - 2 = 200$

5. Sara has so many fish in her aquarium! There are 15 catfish, which is only one-fourth of all Sara's fish. How many fish are in Sara's aquarium?
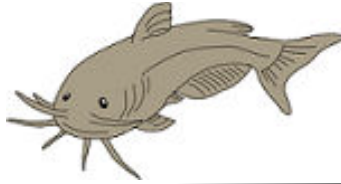
6. A lazy snake is 18 ft long. She decided to take a nap wrapped around a rectangular box like this:

5ft
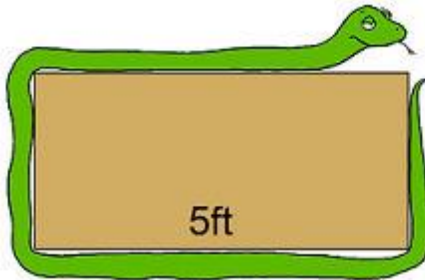
The length of the box is 5 ft, what is the width of the box?

7. How many square tiles with a side whose length is 1 foot are needed to cover the floor of a room that is 20 feet wide and 10 feet long?

8. Ms. Purr has 30 cats. She went to the store and bought toys for 1/3 of them. The rest of the cats are now very upset. How many more toys does she need to buy to make all the cats happy?


9. Mr. Super Spy thought of a secret number. When he subtracted his secret number from 547, the result was 152. What is the secret number?

10. A Number Monster likes to eat whole numbers. Today he was hungry, and ate the numbers 3, 4, 5 and so on. He finished with number 100, which he thought was the yummiest. How many numbers did the Number Monster eat today?

11. Find the area of the park.
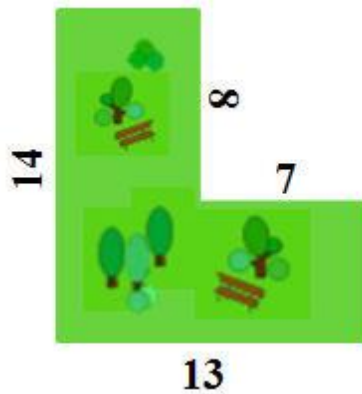
12. The sum of two numbers is 40, and the difference between them is 4. What is the larger number?

13. In a school, all 200 fourth-graders play a musical instrument. Some students play the piano, some play the flute, some play both. If 80 students play the piano and 150 students play the flute, how many students play both the piano and the flute?

14. Pirate Pete wants to give each of his pirate friends an equal number of gold coins. But, he can't remember if 3, 4, 5 or 6 of his pirate friends are coming to his party. What is the fewest number of gold coins that Pirate Pete must have so that each pirate friend who comes to his party gets the same number of gold coins?

<u>**Answers**</u>

Question No.	Answer
1	2 pounds
2	987
3	4 dolls
4	242
5	60 fish
6	4 feet
7	200 tiles
8	20 more toys
9	395
10	98
11	126
12	The larger number is 22
13	30 students play both piano and flute
14	60

IMC 2024 Grade 4

1. What number is covered by the eraser?
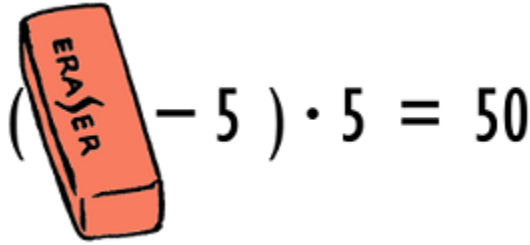
$$(\text{ERASER} - 5) \cdot 5 = 50$$

....

2. Jack the Carpenter has a log that is 32 meters long. He wants to cut it into 4-meter logs. How many cuts does he need to make if he can only cut one log at a time?

....

3. A digit is covered by the matches and a digit is covered by the birthday candles. Find the least possible three-digit number with all different digits.

....

4. Before falling asleep, Peter counted 240 sheep in 300 seconds. If he had managed to stay awake, how many seconds would it have taken Peter to count 600 sheep at the same rate?

5. Kittens and ducklings are playing in the yard. There are 44 legs and 15 heads in all. How many kittens are playing if each kitten has 4 legs and each duckling has 2 legs?


6. Four friends live on a straight road as shown. Ashley's house is 550 meters from Saanvi's house and 750 meters from Carolyn's house. Mayumi's house is 500 meters from Carolyn's house. How far is Saanvi's house from Mayumi's house?

7. Emma and Yash made 60 snowmen. One-third of the snowmen have a red scarf, one-fifth of the rest of snowmen have no scarf, and all of the other snowmen have a green scarf. How many snowmen have a green scarf?
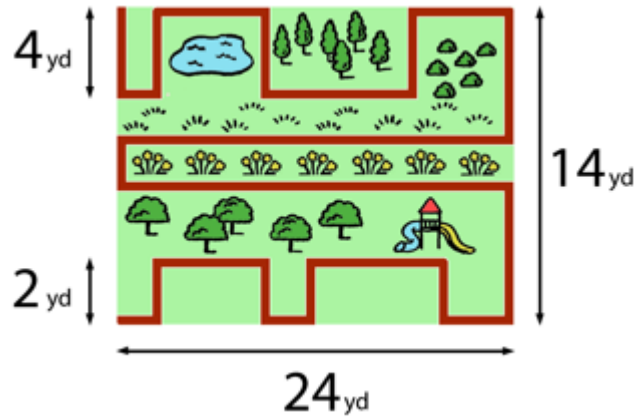
**8.** Two chocolate rabbits plus 4 ounces weigh the same as four chocolate frogs.
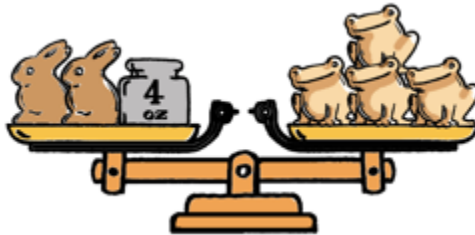
One chocolate rabbit and two chocolate frogs weigh 20 ounces.

How much does one chocolate rabbit weigh?

9. Dorothy walks her dog Root through the park. Root sniffs everything and follows a strange path, and he always turns at right angles. How far do they walk if their path is shown in red below?

10. Maria has yellow $1 \times 1 \times 1$ cubes and green $2 \times 2 \times 2$ cubes. Maria stacked all of her cubes into a block that (as shown) measures $8 \times 6 \times 6$. Each layer contains cubes that are all the same color. How many cubes did Maria use?
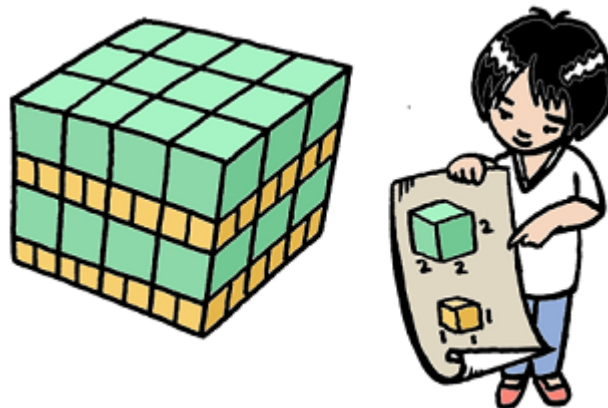
11. John has 20 cards. The front of each card is either red or green, and the back of each card is either red or green. The number of green sides is three times the number of red sides. And there are 3 cards that have two red sides. How many cards have two green sides?

12. Peter and Piper have the same number of peppers. Peter put all of his peppers in his baskets with 18 peppers in each basket, except for his last basket which contains only 8 peppers. Piper put all of her peppers in her baskets, but she put 12 peppers in each basket, except for the last basket which contains only 8 peppers. How many peppers does Piper have if Peter and Piper have a combined total of fewer than 300 peppers?

13. Petunia is a cat lady who loves to wear a hat while she walks her cat. She has 7 cats and only walks one at a time. The cats are brown, gray, white, black, orange, spotted, and striped. Petunia has only 6 hats. They are gray, white, black, orange, spotted, and striped. If Petunia *never* matches her hat to the cat she is walking, how many cat/hat combinations are possible?

14. Mr. Mighty can smash any concrete block into exactly eight pieces with one punch. He can then take any of the pieces and smash it into eight pieces. How many punches does it take Mr. Mighty to smash a block into 2024 pieces?

<u>Answers</u>

| Question No.	Answer
1	The covered number is 15.
2	Jack the Carpenter needs to make 7 cuts.
3	The least possible three-digit number is 102.
4	750 seconds.
5	There are 7 kittens playing in the yard.
6	Saanvi's house is 300 meters from Mayumi's house.
7	There are 32 snowmen with a green scarf.
8	One chocolate rabbit weighs 9 ounces.
9	134 yards.
10	Maria has 120 cubes.
11	There are 13 cards that have two sides.
12	Piper has 44 or 80 or 116 peppers.
13	There are 36 possible combinations.
14	It takes Mr. Mighty 289 punches.

IMC 2023

Grade 4

1. Find the greatest four-digit number that you can make using each of the digits 2, 0, 2, and 3.

2. Katia invited 30 friends to watch her backyard gymnastics show. She set up 3 rows of chairs with 6 chairs in each row. How many more chairs does Katia need to set up if each friend must be seated?

3. Molly started to climb the steps of the Old Tower. She took 20 steps, which is one-fourth of all the steps. How many steps does the Old Tower have?
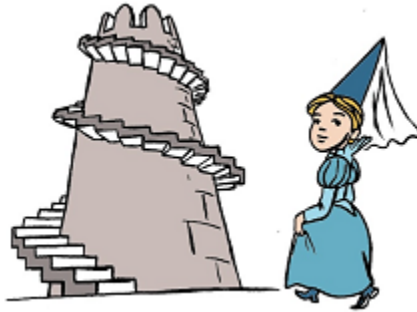
**4.** What is the least three-digit number with all different odd digits?

5. Albert the Monkey found a bunch of coconuts and put them into two equal piles. Then he moved 3 coconuts from one pile to the other, so now the number of coconuts in the second pile is twice the number of coconuts in the first pile. How many coconuts did Albert find?

6. The figure below is made of four 1-inch × 1-inch squares. What is the perimeter of the figure?
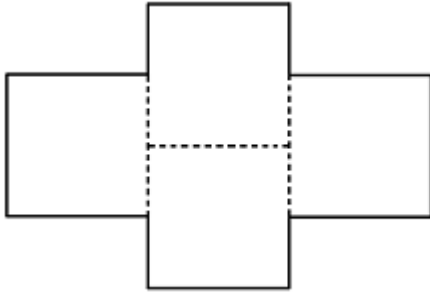
7. A rectangular garden has a square pond in the middle as shown in the picture. If each side of the pond is 6 feet long, what is the area of the land around the pond?
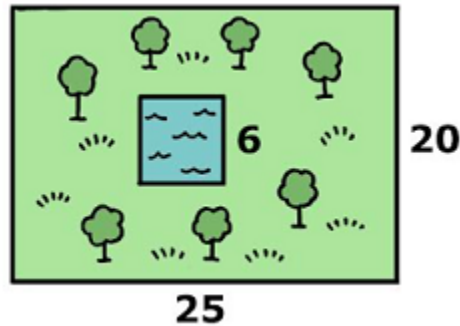
8. A store can print your soccer team's name on 12 t-shirts in 10 minutes. You want to buy 30 t-shirts. How long will it take the store to print all 30 t-shirts if the t-shirts are always printed at the same rate?

9. Four fairies made a total of 120 gifts for a party. The first fairy made one-third of the gifts and the second fairy made 28 gifts. The third fairy and the fourth fairy made an equal number of gifts. How many gifts did the fourth fairy make?

10. 14 friends are saving money for a trip to the movies. 6 of the friends put $1 into the pile every day, while others put $1 into the pile every even day, and the rest of the friends put $1 into the pile every odd day. If $8 was put into the pile on February $3rd$, how much money will be put into the pile on February $4th$?

11. Mary has to arrange four books on a shelf. In how many ways can she do it if she wants to put her favorite book first?

12. There is a big pile of boxes that each measure $1 \times 1 \times 1$. Jesse uses all of the boxes to make the rectangular figure shown below, which measures $4 \times 5 \times 6$.
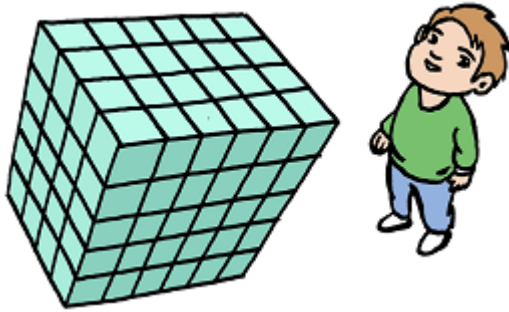
Then Aram takes all of the boxes from one side of the figure. Then Sandy takes all of the boxes from one side of the remaining figure. Finally, Wyatt takes all of the boxes from one side of the remaining figure. (Assume that "side" in this problem refers to any of the six faces of the rectangular figure.) How many boxes did they take (in total) if they took the least number of boxes possible?

....

13. Eleven pirates and their captain found a treasure chest full of gold coins. They tried to divide all of the coins equally, but they had one coin left. Then the captain took 20 coins for himself and he was able to divide the rest of the coins equally among the eleven pirates. What is the least possible number of gold coins in the chest?

....

14. Numberland is inhabited by natural numbers that speak. Even numbers always tell the truth, and odd numbers always lie. Three numbers met in Numberland and had the following conversation.

- The first number said, "Our product is odd."
- The second number replied, "The first number is divisible by 6."
- And the third number said, "I am prime."

What is the third number?

....

Question No.	Answer
1	The greatest possible four-digit number that you can make is 3220 or 3,220.
2	Katia needs to set up 12 more chairs.
3	The Old Tower has 80 steps.
4	The least three-digit number with all different odd digits is 135
5	Albert the Monkey found 18 coconuts.
6	The perimeter of the figure is 10 inches.
7	The area of the land around the pond is 464 square feet.
8	It will take 25 minutes.
9	The fourth fairy made 26 gifts.
10	12 dollars will be added to the pile on February 4th.
11	Mary can arrange the books in 6 ways.
12	There were 16 people in the line.
13	The least possible number of gold coins is 97.
14	The third number is 2.

IMC 2022 Grade 4

1. How many different three-digit numbers can you make with the cards below?

....

2. Cecilia arranged all of her coins and two red buttons into the shape of a square. How many coins are blocked from view by Cecilia?

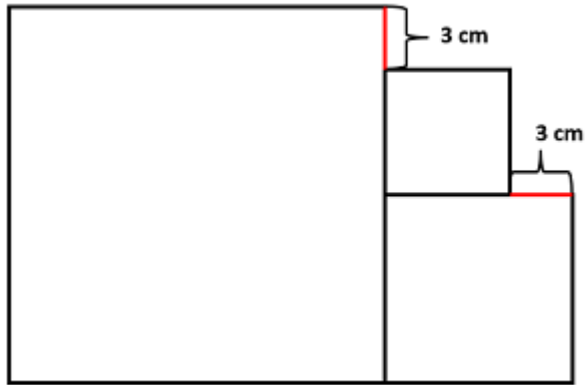...

3. What number is covered by the sock?

$$(+ 3) \cdot 5 = 60$$

....

4. What is the sum of all of the odd factors of 18?

....

**5.** There are 3 squares in the figure. The side length of the smallest square is 6 cm. What is the side length of the largest square?

....

6. A scared rabbit is hopping home. He has 36 meters to go. If every jump is one and a half meters long, how many jumps does he have left?

....

7. Steve found a treasure map that shows a stone, tree, hill, and flag at the corners of a rectangle. Steve started at the stone, took some number of steps to the oak tree, then to the flag, and then to the grassy hill. He marked the grassy hill and then returned to the stone in 22 steps. If he took a total of 120 equal steps, how many steps did Steve take from the stone to the oak tree?
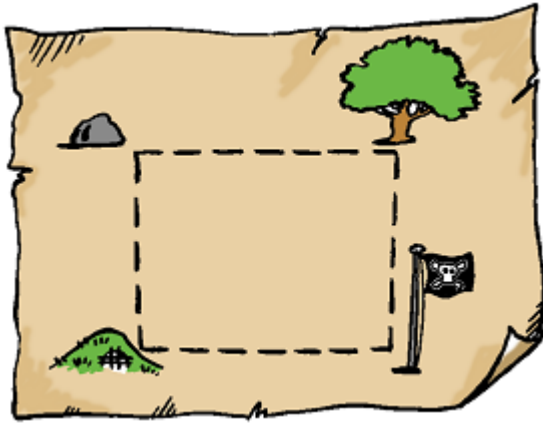
8. An unfortunate cook made a few pancakes. One-fourth of all the pancakes were stolen by a cat. Then 4 pancakes were eaten by a parrot while the cook tried to catch the cat. Now, the cook has 32 pancakes. How many pancakes did the cat steal?

9. There are 6 cities on an island. Every pair of cities is connected by one road. There are no other roads on the island. What is the total number of roads on the island?


10. A dragon likes to eat red peppers and green peppers because they help him breathe fire. If the dragon eats 2 red peppers, he can breathe fire that is 25 meters long. If the dragon eats 10 green peppers, he can breathe fire that is 15 meters long. Today, the dragon ate 3 red peppers and 5 green peppers. How long is the fire?

**11.** What is the area of the shaded figure if the area of one square is 1 square centimeter?
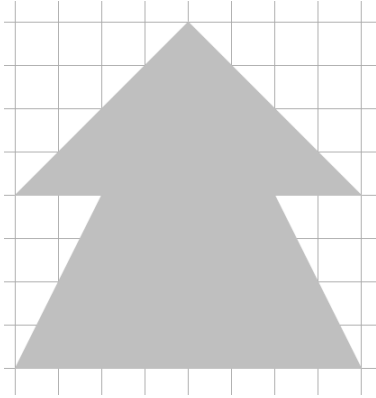
12. A chest contains 5 balls that each have the number 3 written on them. The chest also contains 5 balls that each have the number 7 written on them, and 5 balls that each have the number 11 written on them. Octi the Octopus takes out a few balls, one at a time, and calculates the sum of the numbers written on them. How many different sums less than 15 are possible?
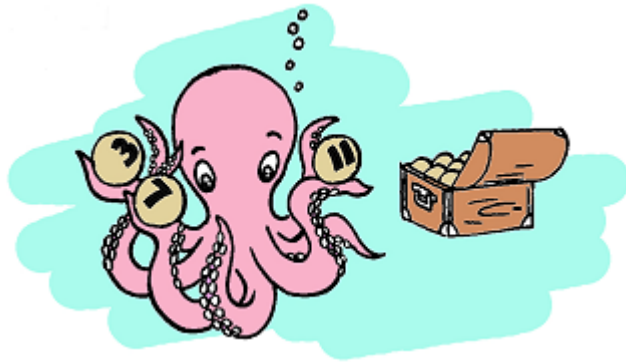
13. Bob used identical cubes to build a rectangular tower that is 25 cubes tall, 5 cubes wide, and 6 cubes long. Beatrice used the same type of cube to build a tower that is 12 cubes tall, 3 cubes wide, and 5 cubes long. Then Bob destroyed Beatrice's tower and used all of her cubes to make his tower even taller, while keeping its width and length the same. How many cubes tall is Bob's tower now?
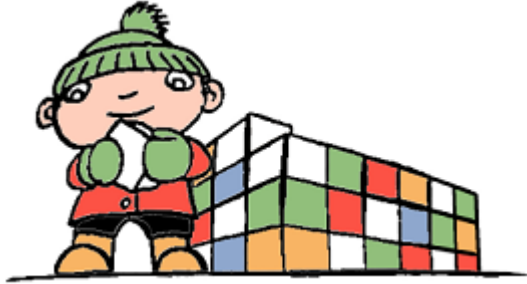
14. A train full of giraffes and rabbits goes to a resort. In every train car, there are either 25 giraffes or 45 rabbits. The total number of giraffes on the train is equal to the total number of rabbits on the train. What is the least possible number of train cars if there are more than 500 animals on the train?
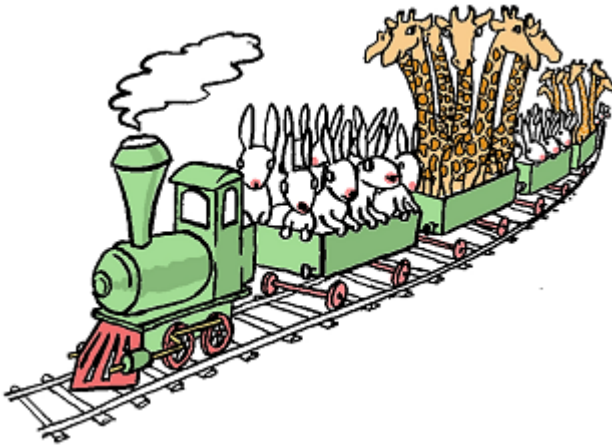
Question No.	Answer
1	You can make 3 three-digit numbers.
2	5 coins are covered.
3	The covered number is 9.
4	The sum of all of the odd factors is 13.
5	The side length of the largest square is 18 cm.
6	The scared rabbit has 24 jumps left.
7	Steve took 38 steps from the stone to the oak tree.
8	The cat stole 12 pancakes.
9	The total number of roads is 15.
10	The fire is 45 meters long.
11	The area of the shaded figure is 40 square centimeters.
12	6 or 9 different sums less than 15 are possible.
13	The tower is 31 cubes tall now.
14	The least possible number of train cars is 28.

IMC 2021

Grade 4

1. What digit is covered?

$$(1\,\square - 3) \cdot 5 = 75$$

....

2. What is the smallest four-digit number that you can make using the four cards below?

2 0 2 1

....

3. Flavor Fast won 18 races, which is one-third the number of races that Slow Stue won. How many races did Slow Stue win?

....

4. Noah bought a rectangular frame with perimeter 30 cm. But then Noah measured the soccer certificate he wants to put in the frame and realized that the frame should be 4 cm longer. What should be the perimeter of the new frame Noah must buy?

....

5. Eleven coins are in a row, and the first coin shows heads. The rest of the coins alternate tails and heads. You turn over seven consecutive coins. What is the greatest number of tails you could now have in the row?

6. John has two boxes. One box has 88 spiders. The second box has 44 spiders. Every day, John moves two spiders from the first box to the second box. In how many days will the number of spiders in the boxes be equal?

7. A soccer team gets three points for a win, one point for a tie, and zero points for a loss. The team plays ten games and has three more wins than losses. What is the greatest possible number of points the team could have?

8. Andy wrote a two-digit number. He said the following:
a) The sum of the digits is greater than 14.
b) The sum of the digits is less than 14.
c) The sum of the digits is 15.
d) The number has 7 at the end.
But one sentence is false. What two-digit number did Andy write?

9. Temper Tantrum is learning how to play music! So far, he has broken 84 musical instruments: a few guitars, twice as many banjos as guitars, and twice as many pianos as banjos. How many banjos has Temper broken?


10. Jackie played a few chess games last night. She started at 5 : 15 pm. She played each game for exactly 10 minutes and took a 5 minute break after each game. If she finished playing the last game at 7 : 55 pm, how many games did Jackie play?


11. Six chipmunks try to divide their nuts evenly, but have 5 nuts left. Then a seventh chipmunk arrives and adds 1 nut to the pile. Now, the 7 chipmunks can evenly divide all the nuts. What is the smallest number of nuts that could be in the pile after the seventh chipmunk adds his nut?

12. A mermaid has a terrarium that measures 42 inches × 10 inches × 9 inches. She also has a box that measures 3 inches × 3 inches × 3 inches. Every minute, the mermaid fills the box with sand from her backyard and then pours the sand into the terrarium. How many minutes does it take the mermaid to fill three-quarters of the terrarium with sand?
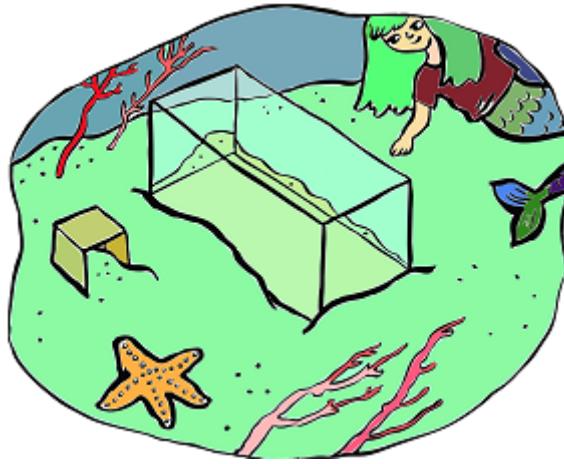
13. The area of the gray region is 136 square units. Find the area of the white rectangle.
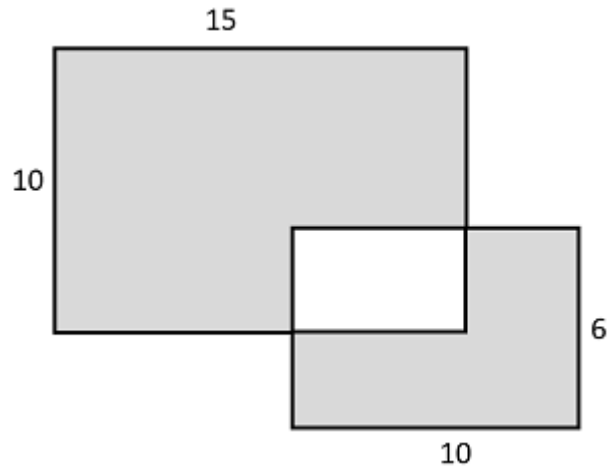
14. Yien and Toni are at an escape room and need to unlock a treasure chest. The girls need to find a three-digit number that is made of three different even digits, and they know zero cannot be the first digit. They try different combinations and guess correctly when they have tried half of the possible combinations. How many numbers did Yien and Toni try?

| Question No.	Answer
1	The covered digit is 8.
2	The smallest four-digit number that you can make is 1022 or 1,022.
3	Slow Stue won 54 races.
4	The perimeter of the new frame should be 38 cm.
5	The greatest number of tails you could have is 6.
6	The number of spiders in the boxes will be equal in 11 days.
7	The greatest possible number of points the team could have is 19.
8	Andy wrote 87.
9	Temper Tantrum has broken 24 banjos.
10	Jackie played 11 games.
11	The smallest number of nuts the chipmunks could have is 42.
12	105 minutes.
13	The area of the white rectangle is 37 square units.
14	Yien and Toni tried 24 numbers.

IMC 2020 Grade 4

1. What number is covered?

$$(\; \boxed{} \; - 7 \;) \cdot 5 = 40$$

....
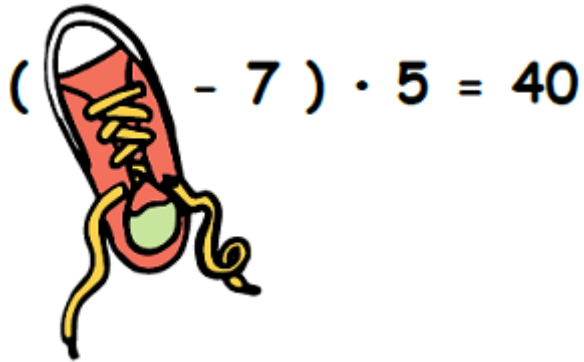
2. Jazzy-Whazzy-Jumper jumps half a meter in one jump. How many jumps will it take him to travel 48 meters?

....
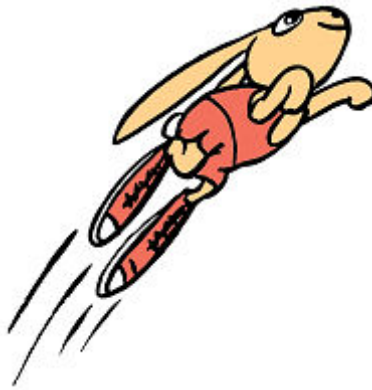
3. Tycho drew a 7 × 5 rectangle but then his puppy, Mishka, ate part of it! The rectangle has been ripped, but some green aliens and yellow smiley faces remain. Use the pattern to decide how many yellow smiley faces Tycho drew on the original rectangle.
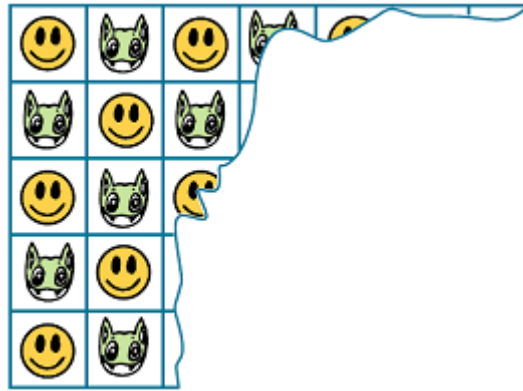
4. A typical die has the numbers 1 to 6 arranged on its sides so that the sum of each pair of numbers on opposite sides is equal. What is the greatest product of two numbers on opposite sides?

5. Kate can make 15 paper fortune tellers in 18 minutes. At this rate, how many paper fortune tellers can she make in 30 minutes?

6. Elise wrote all possible four-digit numbers using two of the digit 2 and two of the digit 0. Two of Elise's numbers have a greater difference than any other pair. What is that difference?

7. Peter-The-Two-Year-Old-Terror has had 80 babysitters. One-fifth of his babysitters have quit, 8 babysitters have been fired, and the rest of his babysitters have just run screaming down the street. How many babysitters have run screaming?

8. Jamila paid $2.20 for 5 shark erasers and 1 keychain. Lucia paid $3.40 for 2 shark erasers and 6 keychains. How many cents did Hari pay for 1 shark eraser and 1 keychain?
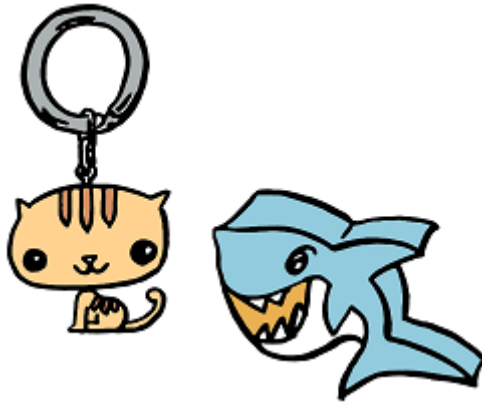
9. Steady-Eddy's clock always reads the correct time and Fast-Phil's clock is always set 15 minutes ahead. Fifty minutes ago, Phil's clock read 2 : 50PM. How many minutes after 3 : 00 PM does Eddy's clock read now?
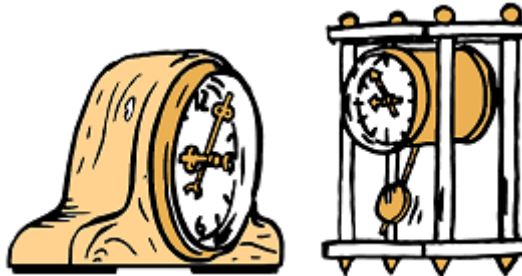
10. What is the area of the shaded figure if the area of one square is 5 square centimeters?

11. If Pirate Jack splits all of his coins into 7 equal piles for his parrots, he has 4 coins left. Or, if he splits all of his coins into 11 equal piles for his shipmates, he has 4 coins left. Assuming every pile has at least 1 coin, what is the least possible number of coins Pirate Jack has?

12. A pool measuring 80 ft long × 40 ft wide × 16 ft high is half filled with jello for a charity event. A second pool that measures 50 ft long × 16 ft wide × 12 ft high is completely filled with jello. All the jello in the second pool is pumped into the first pool. What is the height of the jello in the first pool now?

13. Find the perimeter of the park.
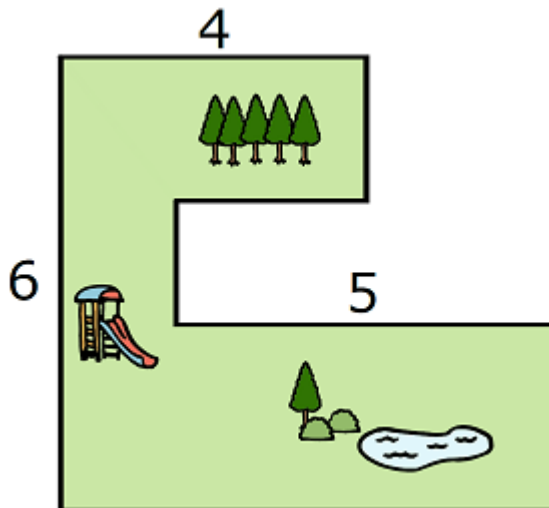
14. There is a mountain with 30 bat caves in a row that contain 340 bats in all. Any 7 caves in a row contain exactly 77 bats. Suppose the first cave has 7 times more bats than the last cave. How many bats are in the $29th$ cave?

Answers

Question No.	Answer
1	The covered number is 15.
2	96 jumps
3	Tycho drew 18 yellow smiley faces on the original rectangle.
4	The greatest product of two numbers on opposite sides is 12.
5	Kate can make 25 fortune tellers.
6	That difference is 198.
7	56 babysitters have run screaming.
8	Hari paid 80 cents.
9	Eddy's clock reads 25 minutes after 3 : 00PM.
10	The area of the shaded figure is 60 square centimeters.
11	The least possible number of coins is 81.
12	The height of the jello in the first pool is 11 feet now.
13	The perimeter of the park is 30 units.
14	There are 28 bats in the 29th cave.

IMC 2019 Grade 4

1. A caterpillar crawls one and a half centimeters per second. How far did she crawl in 24 seconds?

....

2. What number is covered?

$$(15 - \text{\textbf{\large ⬤}}) \cdot 5 = 30$$

....

3. Emily has four cards marked 2, 0, 1, and 9. What is the smallest four digit number that Emily can make with her cards?

The smallest four digit number that Emily can make is 1029 or 1026 or 1,029 or 1,026.

....

4. What is the sum of all of the factors of 25?

....

5. At 5 : 15 pm, Wendell Wizard turned on a home-made time machine. The machine malfunctioned, it only made the clock on his machine go twice as fast as a normal clock. When later that day Wendell managed to fix this machine, the clock read 7 : 05 pm. For how many minutes did the clock run at the wrong speed?
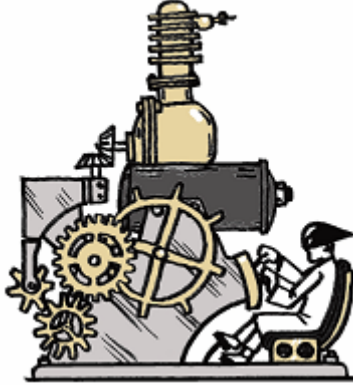

6. Peter is making an army of monsters from clay. He can make 2 Mega-Monsters from 7 ounces of clay or 2 Mini-Monsters from 3 ounces of clay. What amount of clay does he need to build an army with 15 Mega-Monsters and 25 mini-Monsters?

7. Adam the Ant and Anna the Ant dared each other to grab a moving bicycle wheel. Adam the Ant hung on for 20 seconds, in which time the wheel made 30 turns; then, he fell off. Anna the Ant hung on 12 seconds longer than Adam the Ant. How many times did she spin around on the bicycle wheel?

8. The figure is made from five equal squares. If the perimeter of the figure is 72 units, what is the area of one square?
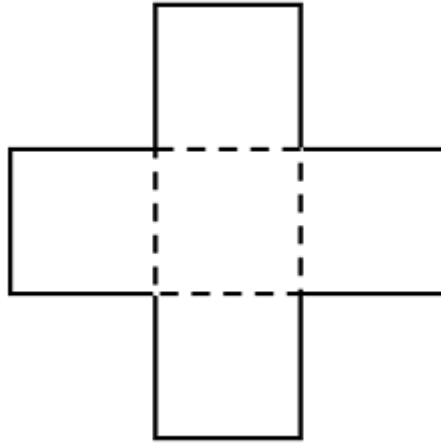

9. Five elves made four identical cakes, each weighing 600 grams. They want to split them up equally, but according to elf tradition, they can each take only three pieces of cake (no matter how big a piece is). After a few minutes, the elves figure out how to split all of the cakes. Each elf gets a half of a cake, a quarter of a cake, and one more piece. How much does the smallest piece of cake weigh?

10. The shaded figure is constructed from triangles. How many square units is the area of the shaded figure?
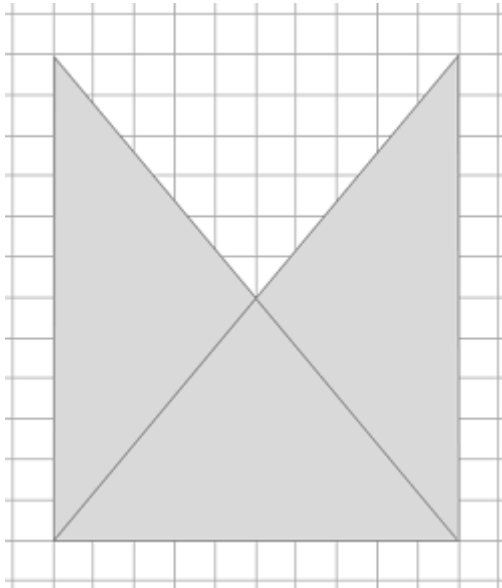
11. Little Jedi's build-it-yourself-light-saber has 4 sections. The first section is 60 centimeters long, and each following section is 10 centimeters shorter than the previous. When fully extended, each pair of consecutive sections has a 5-centimeter overlap. How long will Jedi's light saber be when fully extended?
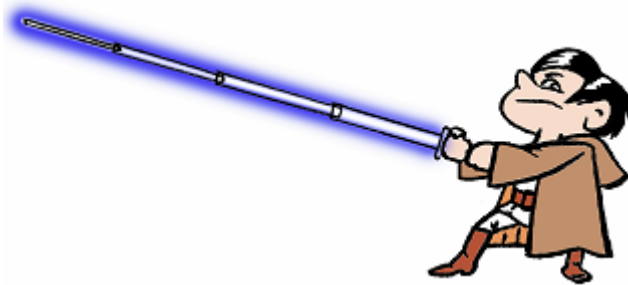
12. In a school one-third of all 240 students play soccer. Forty four students play both soccer and basketball and sixty students do not play any of these games. How many students play only basketball?

13. An equal number of giants and trolls go on a cruise. On each ship there are either 36 giants or 81 trolls. What is the smallest possible number of ships?

14. Alice used 9 cm × 9 cm × 9 cm cubes to build a tower which is 12 cubes tall, 4 cubes wide and 3 cubes long. Then, she decided to make her tower taller by taking apart one of the side layers to build a few more layers on the top of the tower. What is the smallest possible height, in centimeters, of the new tower?

Answers

Question No.	Answer
1	The caterpillar crawled 36 centimeters.
2	The covered number is 9.
3	The smallest four digit number that Emily can make is 1029 or 1026 or 1,029 or 1,026.
4	The sum of all of the factors is 31.
5	The clock ran at the wrong speed for 55 minutes.
6	The least amount of clay Peter needs is 90 ounces.
7	Anna the Ant would have spun around on the wheel 48 times.
8	The area of one square is 36 units.
9	The smallest piece of cake weighs 30 grams.
10	The area of the shaded figure is 90 square units.
11	Fully extended Jedi's light saber is 165 centimeters long.
12	100 students play only basketball.
13	The smallest possible number of ships is 13.
14	The smallest possible height is 144 centimeters.

Grade 4

IMC 2018

1. Rachel has four cards marked 2, 0, 1, and 8. What is the greatest four digit number that Rachel can make with her cards?

$$2 \quad 0 \quad 1 \quad 8$$

2. Coins were arranged in a square. How many coins are covered?
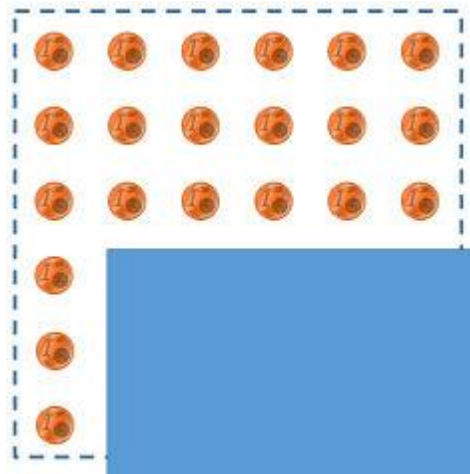

3. What number is covered?

$$(\; \text{?} \; + \; 2 \;) \; \cdot \; 10 \; = \; 70$$

4. What is the greatest odd factor of 22?

5. Kangaroo Belle decided to exercise by jumping from her home to the Green River, which is 35 meters away. If she goes two and a half meters in a single jump, how many jumps did she make?

6. A very hungry hippo can eat 25 kilograms of grass in 50 minutes. How many minutes will it take the hippo to eat 60 kilograms of grass?
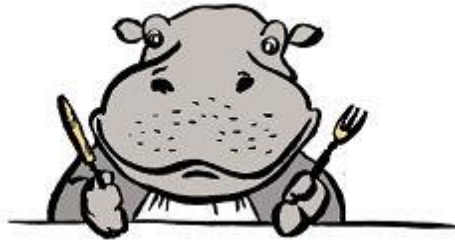
7. Usually Mary drives to grandma's house in a straight line. But today, she saw a "Detour" sign and had to turn left and drive for 8 miles, then take a right and continue, then take another right and drive until she got there. This detour was 38 miles long. How far, in miles, is Mary's usual drive to grandma's house?
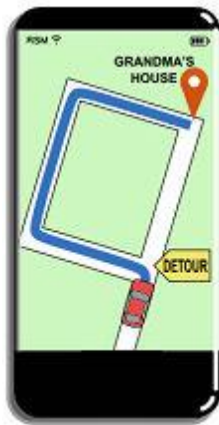

8. Winnie-the-Pooh had only one full jar of honey left. The other jars were empty. Trying to find the full jar, Winnie broke one-third of his empty jars. Now, he has 37 jars left (one of them is full of honey). How many jars did he break?

9. Two days ago, Princess Genevieve gave the village Dragon two chocolate bars, and she flew on his back for fifteen minutes. Yesterday, she gave the Dragon two cookies, and she flew on his back for nine minutes. Today the Princess gave him 5 chocolate bars and 1 cookie. For how many minutes did she fly on his back?

10. If the area of the white square in the middle is 4 square units, find the area of the shaded region.
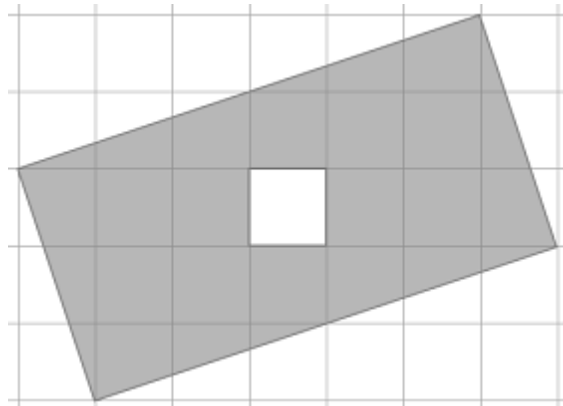
11. Aladdin found a cave with boxes of treasure inside, each measuring 2 inches × 2 inches × 2 inches. However, Aladdin brought only one box, measuring 6 inches ×

8 inches × 10 inches, with him. He fills it with as many boxes of treasure as would fit. How many boxes of treasure was he able to take?

12. Ann wants to organize her sculptures on some of the shelves in her room. If she puts 15 sculptures per shelf, one shelf has only 14 sculptures on it. If she puts 12 sculptures per shelf, one shelf has only 11 sculptures on it. What is the least number of sculptures that Ann could have?

13. There were two competitions in a puzzle tournament. The Sudoku competition had twice as many participants as the Crossword competition. If 225 people competed overall, and 60 of them participated in both competitions, how many people participated in the Sudoku competition?

14. A cabinet has two sliding doors of different sizes. When the cabinet is fully closed, they overlap by two-fifths of the width of the smaller door. When both doors are slid to one side, the part of the longer door that is not behind the shorter one is

half as wide as the original overlap, and the open portion of the cabinet is 36 inches wide. What is the width of the whole cabinet?

Answers

| Question No.	Answer
1	The greatest four digit number that Rachel can make is 8210
2	15 coins are covered.
3	The covered number is 5.
4	The greatest odd factor is 11.
5	Kangaroo Belle made 14 jumps.
6	It will take 120 minutes.
7	Mary's usual drive to grandma's house is 22 miles.
8	Winnie-the-Pooh broke 18 jars.
9	Princess Genevieve flew for 42 minutes.
10	The area of the shaded region is 76 square units.
11	Aladdin was able to take 60 boxes of treasure.
12	The least number of sculptures Ann could have is 59.
13	There were 190 participants in the Sudoku competition.
14	The width of the whole cabinet is 108 inches.

Grade 4

IMC 2017

1. Ella shot twelve arrows at a target. After each shot, she wrote the current sum of her points on a piece of paper: 3, 5, 8, 11, 14, 16, 18, 24, 27, 29, 30. All of the sums she wrote are correct, but she forgot to write one of the sums down. What sum did she forget to write?
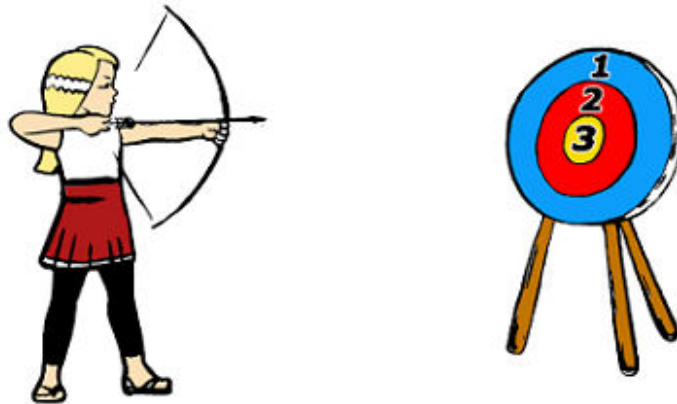
2. A snail started to climb up a pole at 10 a.m. She climbed 3 inches every half hour. At 4 p.m. she stopped to take a break. How many inches up the pole had she climbed?

3. John paid $22.50 for 9 cupcakes. Peter planned to spend all of his money to buy 20 brownies that cost $1.75 each. Instead, however, he bought the same cupcakes John bought. If Peter spent all of his money, how many cupcakes did he buy?
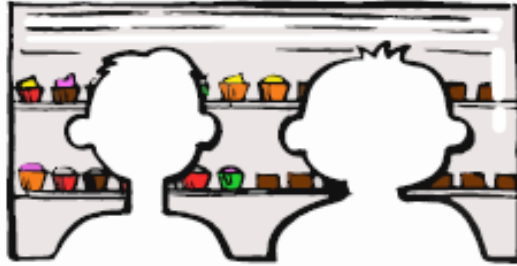
4. A clock is half an hour slow. If the clock showed the time as 3 : 40 p.m. half an hour ago, how many minutes before 5 : 00 p.m. is it now?
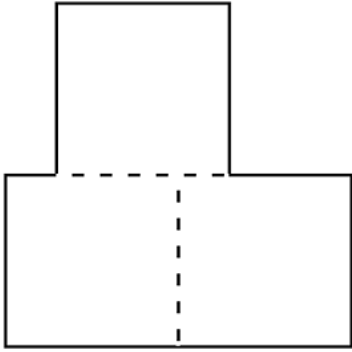

5. Tim forgot his secret number, but he knows that it is 5 more than the number hidden by "*" in the correct number sentence:

$$5 \cdot (* + 1) = 40$$

What is Tim's secret number?

6. The figure is made from three equal squares. If the area of one square is 100 square units, what is the perimeter of the figure?

7. What is the sum of all the factors of 91?

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8. Each day, the Royal Chocolate Master puts all of the candies he makes in boxes with the same number of candies in each box. Today the Queen wants him to put 30 candies in each box, but the King wants 25 candies in each box. The Chocolate Master has already made 70 candies. What is the smallest number of candies he still needs to make so that all of the candies can be put into boxes, each with either the Queen's or the King's desired number of candies?


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9. In a cookie-eating contest, Luke ate 8 cookies in 1 minute and 30 seconds. At this rate, how many cookies will he eat in 3 minutes and 45 seconds?


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10. Sara has a fish tank that is 10 inches long, 6 inches wide, and 9 inches high. She poured water into the fish tank. If the surface of the water is 2 inches from the top of the tank, how many cubic inches of water did she pour into the fish tank?
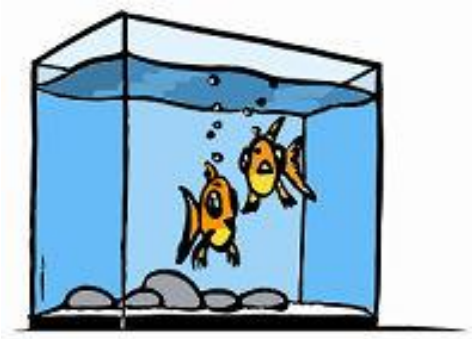
11. If the area of the small dark gray triangle is 6 square units, how many square units is the area of the light gray part of the big triangle?
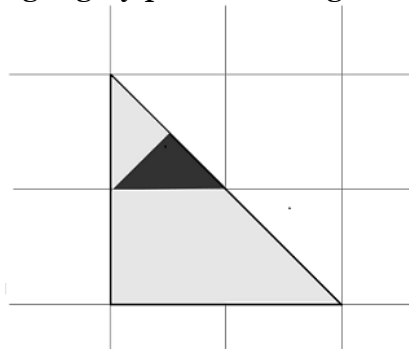
12. In a school, half of the 300 students saw *Zootopia*, 180 students saw *Finding Dory*, and 45 students did not see either movie. How many students saw both movies?
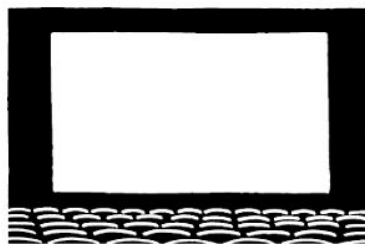

13. In a juggling competition, $\frac{7}{20}$ of all the jugglers use balls only, $\frac{3}{7}$ of all the jugglers use rings only, and the rest of jugglers use both balls and rings. If there are less

than 200 jugglers in the competition, how many jugglers use both balls and rings?

14. Two faulty tennis ball machines start to shoot balls from opposite sides of a 25 meter by 10 meter tennis court. The green ball machine shoots green balls that stop on the court 5 meters to 20 meters from the green machine's side. The yellow ball machine shoots yellow balls that stop on the court 2 meters to 16 meters from the yellow machine's side. Find the area of the tennis court that has balls of either color on it.
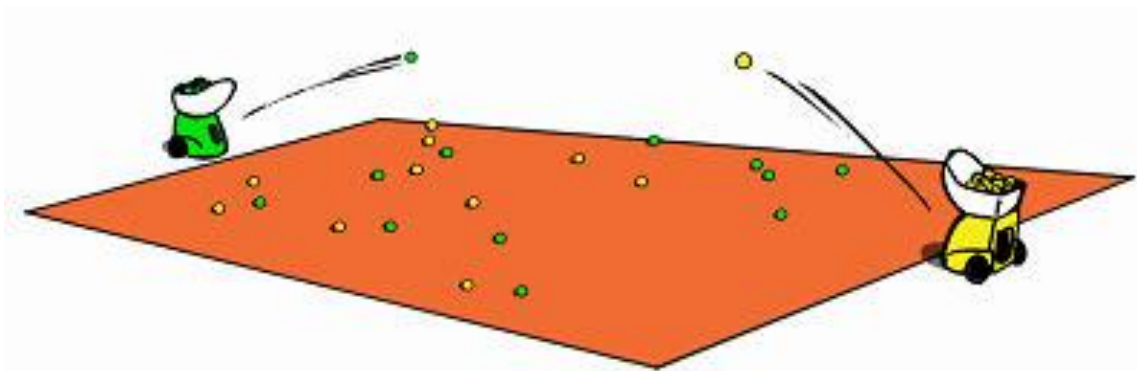
Answers

| Question No.	Answer
1	21
2	36 inches
3	14 cupcakes
4	It is 20 minutes before 5 : 00 p.m.
5	12
6	80 units
7	112
8	80 candies
9	20 cookies
10	420 cubic inches
11	42 square units
12	75 students
13	31
14	110 square meters

Grade 4
IMC 2016

1. Sammy came home from school half an hour ago. His parents always come home one hour after Sammy comes home. In how many minutes will Sammy's parents come home?

2. Michael wrote on the board a number sentence where he added several numbers.
This is how he started it: 1 + 1 + 1+
This is how he finished it: +1 + 1 = 11
In the middle, he wrote as many pluses and ones as needed to make the number sentence correct.
How many symbols altogether (digits as well as "+" and "=") did Michael write?

3. If you pay $2.50 for two chocolate bars and 3 dollars for four cookies, how many dollars would you pay for a chocolate bar and a cookie?

4. A rectangular playground is 12 yards wide and twice as long. How long is the fence around it? The gates are part of the fence.

5. The squirrel's jumps are one half of a yard long. How many jumps must the squirrel make to get to the acorn?


5 yards   7 yards
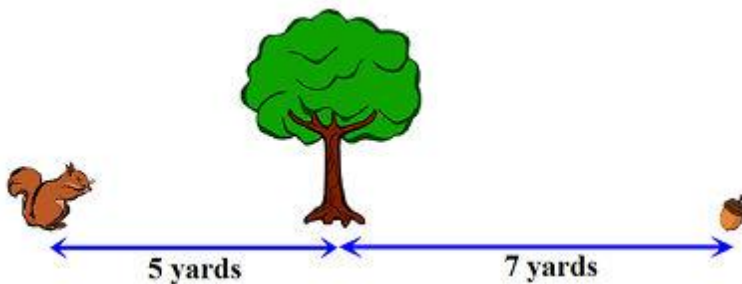
6. Pirate Pete wants to give each of his pirate friends an equal number of gold coins. But, he can't remember if 3, 4, 5 or 6 of his pirate friends are coming to his party. What is the fewest number of gold coins that Pirate Pete must have so that each pirate friend who comes to his party gets the same number of gold coins?

7. What number does x stand for in the correct number sentence below?

$$3 \cdot (x - 1) = 12$$

8. What is the sum of all the factors of 22?

9. Leah stored all of her RSM homework papers for the last 3 years in boxes. She stacked the boxes in a pile 5 boxes wide, 6 boxes long, and 4 boxes high. How many boxes of homework papers does Leah have?
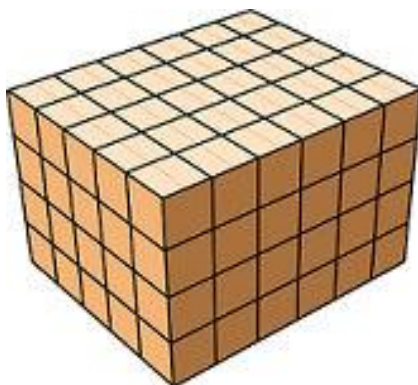
10. It takes a turtle 2 hours to walk 6 miles. In how many minutes would it walk 2 miles?

11. If the light gray area is 10 units, how many units is the dark gray area?
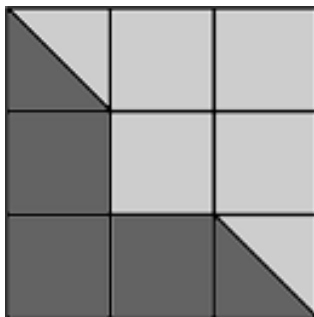
12. In a school, all 200 fourth-graders play a musical instrument. Some students play the piano, some play the flute, and some play both. If 80 students play the piano and 150 students play the flute, how many students play both the piano and the flute?

13. A young wizard knows every third spell that an old wizard knows. However, the young wizard knows two spells that the old wizard does not know. 8/9 of all the spells that the young wizard knows are known to the old wizard as well. How many spells are there that at least one of them knows?

14. A Magic Carpet is 12 feet long and 10 feet wide. However, only the purple part of the Magic Carpet has magic power. If the magic part is 2 feet wide, find the area of the magic part of the Magic Carpet.

<u>Answers</u>

Question No.	Answer
1	30 minutes
2	24 symbols
3	$2
4	72 yards
5	24 jumps
6	60
7	5
8	36
9	120 boxes
10	40 minutes
11	8 units
12	30 students play piano and flute
13	50 spells
14	72 square feet