

**ICTM 3rd Grade Mathematics Contest**  
(2011–2012)—Individual (#1)

1. Hunter chews 17 packs of gum each month. Each pack of gum has 5 individual sticks of gum. How many sticks of gum does Hunter chew each month?

2. How many circles will be in the 15th row?

3. Natalia spent \$14 for two books. One book cost \$2 more than the other. How much did the higher priced book cost?

4. I am a number between 70 and 100. I am a multiple of 13. What numbers could I be?

5. Which difference is the smallest?

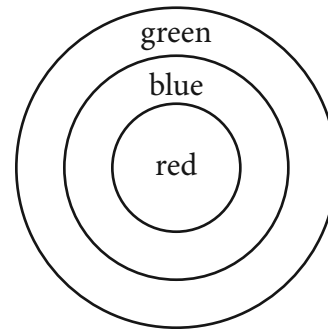
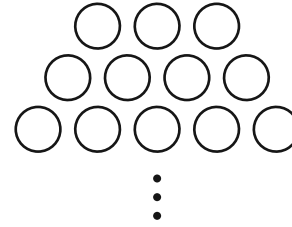
43	38	48	34	48
<u>-32</u>	<u>-20</u>	<u>-36</u>	<u>-25</u>	<u>-29</u>

6. Which is heaviest: a blue jay, a cow, or a bumblebee?

7. Jacqueline starts school at 8:45 a.m. and is there for 6 hours and 10 minutes. What time does she leave school?

8. red = 15 points  
blue = 11 points  
green = 7 points

Antonio threw 18 darts. Seven landed in red, four landed in blue, and the rest landed in green. How many points did Antonio earn?

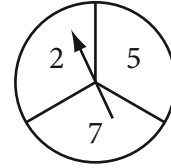


# ICTM 3rd Grade Mathematics Contest

(2011–2012)—Team (#1)

1. Between 7 o'clock and 8 o'clock, 19 bicycles and 227 cars drove by Colin's house. There were how many more cars than bicycles?

2. Melanie spun the spinner three times, then added up the three numbers. What is the largest possible sum?



3. A farmer has 68 cows, 12 horses, and 8 turkeys. How many legs do the animals have?

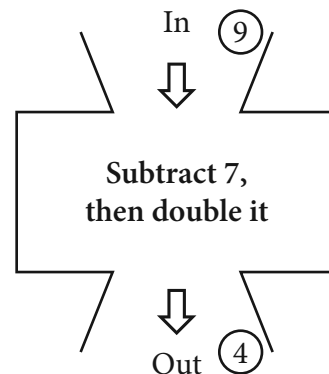
4. Chase played the word “trapezoid” in a board game. Each letter is worth the number of points shown on its tile. How many points did Chase score?



5. Hannah has a 2002 Albert Pujols card that is worth \$10.25. She also has a 1997 Aramis Ramirez card that is worth \$6.84. How much are both baseball cards worth?

6. A bread recipe needs 2 cups of water and 6 cups of flour. Bryan baked bread with this recipe and used 24 cups of flour. How many cups of water did he use?

7. If 19 goes “in” to the machine, what number will come “out” of the machine?



8. Sydney ran 3,070 feet. How many more feet must she run to run a mile? (1 mile = 5,280 feet)

9. Jaden has 18 coins that total \$1.38. He has only quarters and pennies. How many quarters does Jaden have?

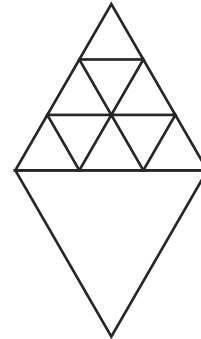
10. All of the trees in the Arrayed Forrest are planted in perfect rows. Each row has 11 trees and there are 35 rows. How many trees are in the Arrayed Forrest?

ICTM 3rd Grade Mathematics Contest  
(2011–2012)—Team (#1)

11. Andrea went to bed at 9:30 p.m. and slept 510 minutes.  
What time did she get up?

12. Forty children and some puppies have 96 legs. How  
many puppies are there?

13. How many triangles are in the figure shown?



14. Angel has five cards numbered 3, 4, 5, 6, and 10. He  
chooses the cards containing the factors of 30. How  
many cards does he choose?

15. The 3rd grade classroom 50-gallon aquarium has:

14 guppies

7 zebra fish

6 neon tetras

5 white clouds

How many fish are in the tank?

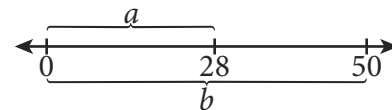
16. Jordan wants to mail a 2-ounce letter to 1770 (a village  
in Queensland, Australia originally known as Round  
Hill), so she needs at least \$1.82 in postage. She already  
put one 84¢ stamp on the envelope. How many 29¢  
stamps does she need to put on the envelope to have  
enough postage?



17. What two numbers add up to 23 and multiply to 126?

18. It takes Paige 2 hours and 10 minutes to read a book.  
Gabrielle can read the same book in 1 hour and 35  
minutes. It takes Paige how many more minutes to read  
the book?

19. The distance  $b$  is how much more than  $a$ ?



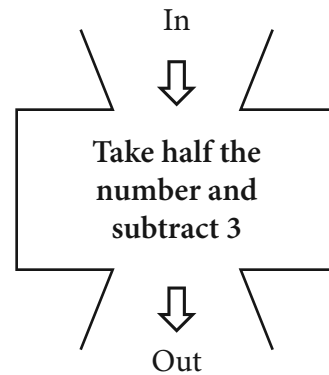
20. On RED PLANET, a punny is worth 3¢, a deme is worth  
9¢, and a nackel is worth 6¢. How much money, in  
cents, does Sinu have if he has 3 punnies, 5 demes, and  
4 nackels?

**ICTM 3rd Grade Mathematics Contest**  
**(2011–2012)—Individual (#2)**

1. Ella bought 18 packs of baseball cards for \$1.00 each and paid \$1.08 tax. How much change did Ella get back if she paid with a \$20.00 bill?
2. What number will go into the machine if 43 comes out of the machine?
3. Eduardo bought 18 boxes of cereal.  $\frac{1}{2}$  of the boxes were sugar-frosted cereal.  $\frac{1}{3}$  of the boxes were plain (not frosted) oat Os. The rest were chocolate-flavored oat Os. How many boxes of chocolate-flavored oat Os did he buy?
4. How many zeros are there in one hundred million one thousand one hundred one?
5. Ava played the word “kilometer” in a board game. Each letter is worth the number of points shown on its tile.  
 How many points did Ava score?



6. Huckell Berry has a garden with 16 rows of raspberries. He planted 14 raspberry plants in each row. How many raspberry plants are in the garden?
7. Jasmine was born in 1997. Her brother is 7 years younger. In what year was Jasmine’s brother born?
8. Determine the value of  $d$  if  $(a + b + c) = 23 \times d$ .



$$\begin{array}{r}
 29 + 17 = \boxed{46} \\
 + \quad + \quad + \\
 17 + 29 = \boxed{b} \\
 \parallel \quad \parallel \quad \parallel \\
 \boxed{46} + \boxed{a} = \boxed{c}
 \end{array}$$

# ICTM 3rd Grade Mathematics Contest

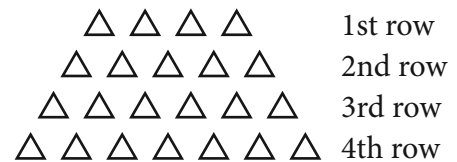
(2011–2012)—Team (#2)

- Madelyn ran 6 laps around the track. The track is 440 yards long. How far did Madelyn run?
- Victor's new digital camera can take 7 pictures per second. How many pictures could Victor take in half of a minute?
- The coins shown are worth how much money, in cents?



- Miguel went to China for 98 days. How many weeks long was Miguel's trip?
- Lily put her books onto 8 bookshelves. She put 13 books on each shelf and had 3 books left over. How many books does Lily have?

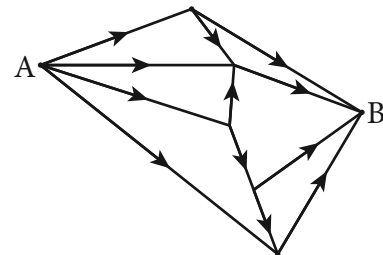
- How many triangles will be in the 12th row?



- Determine the sum of the first six two-digit numbers.

- The jersey numbers of the five starters on the basketball team are 6, 14, 19, 22, and 24. What is the average of these numbers?

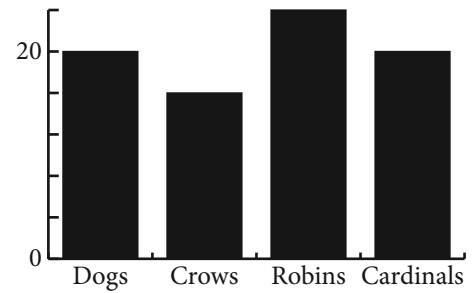
- How many ways can Alexis get from A to B if she must always travel in the direction of the arrows?



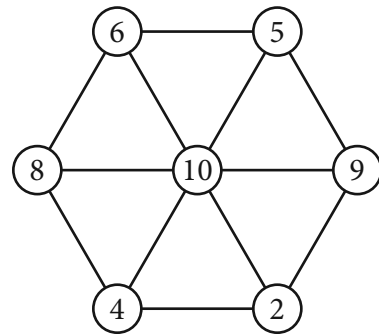
- Sebastian is thinking of a two-digit number. His number is a multiple of 5 and his number is greater than 80. The digits in his number add up to 14. What is Sebastian's number?

**ICTM 3rd Grade Mathematics Contest**  
**(2011–2012)—Team (#2)**

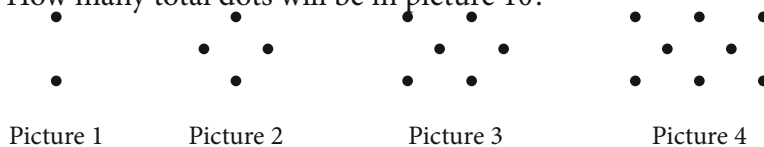
11.  $45 = 5 + (4 \times n)$ . What is the value of  $n$ ?
12. A taco lunch costs \$1.75. What will be the cost for 8 taco lunches?
13. If today is Saturday, then what day will it be 5 days from yesterday?
14. How many wings do the animals have?
15. The jersey numbers of Sara’s favorite hockey players are 99, 10, 19, and 4. What is the average of these numbers?



16. With a special rate, tickets for the observatory at the top of the John Hancock Center cost \$14 for each person. How much will it cost for Mason, Tyler, and 18 of their friends to go to the observatory?
17. What is the smallest sum of 3 connected numbers?
18. Trinity wrote the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, ... and kept writing until she had written the digit “3” six times. What number was she writing that contained the last 3?
19. An anaconda is 804 cm long. A boa constrictor is 377 cm long. How much longer is the anaconda?



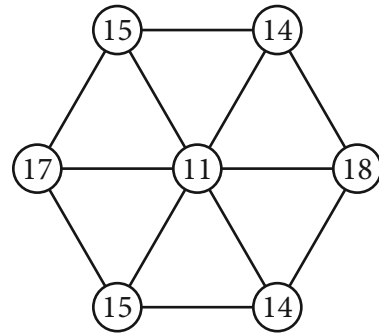
20. How many total dots will be in picture 10?



**ICTM 3rd Grade Mathematics Contest**  
**(2011–2012)—Individual (#3)**

1. Dominic's birthday is on August 4. His sister's birthday is on August 30. This year, Dominic's birthday will be on a Saturday. What day of the week will his sister's birthday be this year?

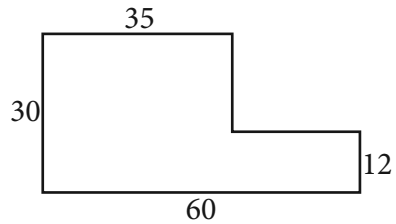
2. What is the smallest sum of 4 connected numbers?



3. Alyssa wrote the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, ... and kept writing until she had written the digit "2" eight times. What number was she writing that contained the last 2?

4. If  $\heartsuit$  is 7 and  $\diamondsuit$  is 9, what is the value of  $3 \times \diamondsuit + \heartsuit \times 8$ ?

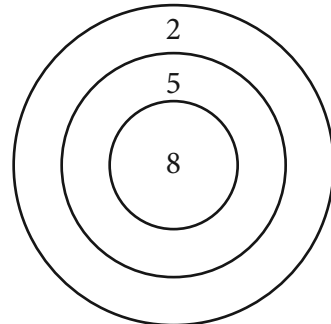
5. What is the perimeter of this shape?



6. Margaret buys tomatoes by the crate for her restaurant. Each crate costs \$14.75. How much will 9 crates cost?

7. Gavin has 5 dozen apples. He peels one third of the apples. How many apples are not peeled?

8. What is the least number of hits to score exactly 52 points?



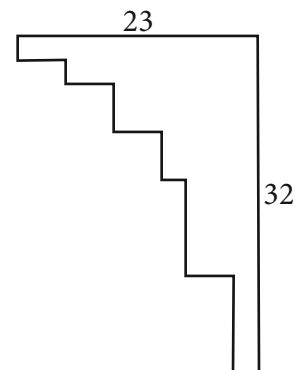
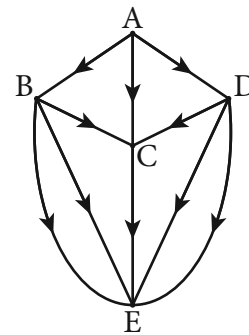
**ICTM 3rd Grade Mathematics Contest**  
(2011–2012)—Team (#3)

1. Jose wrote all the numbers in the number pattern below, but Jada erased some of them (the ones that were where the blanks are now). What is the sum of the numbers Jada erased?

1, 4, 7, \_\_, \_\_, 16, 19, \_\_, \_\_, 28, 31, 34

2. The Vikings lost to the Packers by how many points?
3. Sixty children were playing on the playground. Twenty-four went home. One fourth of those who were left went to play soccer. How many were still at the playground?
4. The letter **D** has line symmetry. How many lines can be drawn to show line symmetry for the letter **I**?
5. How many routes are there from A to E if the directions of the arrows are followed?
6. Ian has six cards numbered 2, 3, 5, 7, 11, and 13. He chooses the cards containing numbers that are not factors of 66. What is the sum of the cards he chose?
7. There are 4 quarts to a gallon. If a quart weighs 2 pounds, how many pounds will 15 gallons weigh?
8. Blake took a history test. There were 40 true-or-false questions on the test. Blake got 16 more right answers than wrong answers. How many did he get right?
9. What is the perimeter of the figure shown?
10. A farmer had 3 woods on his property. The first woods had 437 trees. The second woods had 391 trees. The third woods had 267 trees. How many trees were in the woods?

	Quarters			
Vikings	10	13	7	10
Packers	6	14	17	10

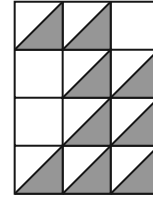




ICTM 3rd Grade Mathematics Contest  
(2011–2012)—Team (#3)

11. How many minutes are there in  $3\frac{1}{4}$  hours?
12. Evelyn is 10 years younger than her sister. The average of the years they were born in is 2001. In what year was Evelyn born?

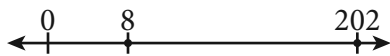
13. Each small square is 36 square units. Determine the area of the shaded region.



14. What is the largest three-digit number between three hundred and six hundred that can be formed using 3 different digits from those below?

2, 3, 4, 5, 6, 7

15. How many numbers ending in 9 are between 8 and 202 on a number line?

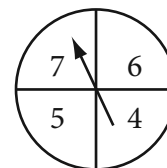


16. Haley's recipe calls for a cup of blueberries for every dozen muffins. Haley baked 180 muffins. How many cups of blueberries did she need?

17. A gross is a dozen dozens. A great gross is a dozen grosses. How many items are in a great gross?

18. Thomas has 4 pairs of pants, 2 pairs of shoes, and 7 shirts. How many different outfits can he wear?

19. Shawn spins the given spinner three times. He adds these three numbers together. How many different prime sums are possible?



20. Michelle ran all the way around the edge of a field shaped like a rectangle. The field was 180 meters long and 70 meters wide. How far did she run?

**ICTM 3rd Grade Mathematics Contest**  
**(2011–2012)—Individual Solutions (#1)**

1.  $17 \times 5 =$  85 sticks of gum
2. The first row has 3 circles and each subsequent row has 1 more circle than the previous row, so the 15th row will have 14 more circles than the first row.  $3 + 14 =$  17.
3. If we take out the \$2 extra that the more expensive book cost, we have  $14 - 2 = 12$  dollars spent on two equal-priced books or \$6 each. Putting the \$2 extra back on, the more expensive book cost  $6 + 2 =$  \$8.
4. The first several multiples of 13 are 13, 26, 39, 52, 65, 78, 91, and 104. Of these, 78, 91 are between 70 and 100.
5.  $43 - 32 = 11$ ,  $38 - 20 = 18$ ,  $48 - 36 = 12$ ,  $34 - 25 = 9$ , and  $48 - 29 = 19$ , so the smallest difference is 9.
6. A cow is heavier than both a blue jay and a bumblebee, so it is the heaviest.
7. 4 hours after 8 a.m. is noon, so 6 hours after 8 a.m. is 2 p.m., 6 hours after 8:45 a.m. is 2:45 p.m., and 6 hours and 10 minutes after 8:45 a.m. is 2:55 p.m..
8.  $18 - 7 - 4 = 7$  darts landed in green.  
 $7 \times 15 + 4 \times 11 + 7 \times 7 =$  198 points.

**ICTM 3rd Grade Mathematics Contest**  
**(2011–2012)—Team Solutions (#1)**

1.  $227 - 19 = \boxed{208}$ .
2. The largest possible sum will come from spinning the largest number each time, so  $7 + 7 + 7 = \boxed{21}$ .
3. Cows and horses each have 4 legs; turkeys each have 2 legs. There are a total of  $4 \times (68 + 12) + 2 \times 8 = \boxed{336 \text{ legs}}$ .
4.  $1 + 1 + 1 + 3 + 1 + 10 + 1 + 1 + 2 = \boxed{21 \text{ points}}$ .
5.  $10.25 + 6.84 = \boxed{\$17.09}$ .
6. Since each full recipe uses 6 cups of flour, 24 cups of flour would be  $24 \div 6 = 4$  full recipes. Each full recipe also uses 2 cups of water, so 4 full recipes uses  $4 \times 2 = \boxed{8 \text{ cups}}$  of water.
7.  $19 - 7 = 12$ ;  $2 \times 12 = \boxed{24}$ .
8.  $5280 - 3070 = \boxed{2210 \text{ feet}}$ .
9. Since there are only quarters and pennies and quarters are worth a lot more than pennies, think about the quarters first. With \$1.38, the quarters could be \$0.25, \$0.50, \$0.75, \$1.00, or \$1.25 of the total. If the quarters were \$0.25, \$0.50, \$0.75, or \$1.00, we would need a lot more than 18 pennies to make up the difference, so the quarters must be \$1.25, which is  $\boxed{5 \text{ quarters}}$ . As a check, there would then be  $18 - 5 = 13$  pennies and a total of  $\$1.25 + \$0.13 = \$1.38$ .
10.  $11 \times 35 = \boxed{385 \text{ trees}}$ .
11.  $510 \div 60 = 8R30$ , so 510 minutes is 8 hours and 30 minutes. 30 minutes after 9:30 p.m. is 10 p.m.; 2 hours after 10 p.m. is midnight; 6 hours after midnight is 6 a.m.; so, 8 hours and 30 minutes after 9:30 p.m. is  $\boxed{6:00 \text{ a.m.}}$ .

ICTM 3rd Grade Mathematics Contest  
(2011–2012)—Team Solutions (#1)

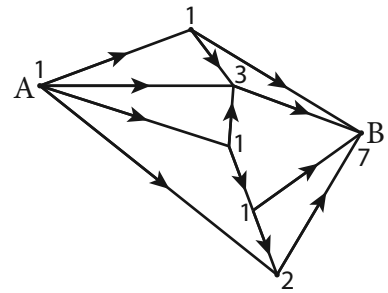
12. Children each have 2 legs and puppies each have 4 legs. 40 children have  $2 \times 40 = 80$  legs, so the puppies have  $96 - 80 = 16$  legs and there are  $16 \div 4 = \boxed{4}$  puppies.
13. There are 9 small triangles, 3 medium-sized triangles (each formed by 4 small triangles), and 2 large triangles (one formed by the 9 small triangles and one below that), so there are a total of  $9 + 3 + 2 = \boxed{14}$  triangles.
14. The factors of 30 are 1, 2, 3, 5, 6, 10, 15, and 30, so he chooses the cards numbered 3, 5, 6, and 10,  $\boxed{4}$  cards.
15.  $14 + 7 + 6 + 5 = \boxed{32}$  fish.
16. With the 84¢ stamp on the envelope, she needs  $\$1.82 - \$0.84 = \$0.98$  more postage. Three 29¢ stamps would be 87¢, so not enough, but 116¢ or \$1.16 from  $\boxed{4}$  stamps would be enough.
17.  $1 + 2 + 6 = 9$ , so 126 is a multiple of 9;  $126 \div 9 = 14$  and  $9 + 14 = 23$ , so  $\boxed{9, 14}$ .
18. 25 minutes more than 1 hour and 35 minutes is 2 hours, so  $\boxed{35}$  minutes more than 1 hour and 35 minutes is 2 hours and 10 minutes.
19.  $b = 50$  and  $a = 28$ , so  $b$  is  $50 - 28 = \boxed{22}$  more than  $a$ .
20.  $3 \times 3¢ + 5 \times 9¢ + 4 \times 6¢ = 9¢ + 45¢ + 24¢ = \boxed{78¢}$ .

**ICTM 3rd Grade Mathematics Contest**  
**(2011–2012)—Individual Solutions (#2)**

- $18 \times \$1.00 + \$1.08 = \$18.00 + \$1.08 = \$19.08.$   
 $\$20.00 - \$19.08 = \boxed{\$0.92}$  (or 92¢).
- 43 is the result of subtracting 3 from  $43 + 3 = 46$ ; 46 is the result of taking half of  $2 \times 46 = \boxed{92}$ .
- $\frac{1}{2}$  of 18 is 9;  $\frac{1}{3}$  of 18 is 6; so,  $18 - 9 - 6 = \boxed{3 \text{ boxes}}$  were chocolate-flavored.
- One hundred million, one thousand, one hundred one is 100,001,101, which has  $\boxed{5 \text{ zeros}}$ .
- $5 + 1 + 1 + 1 + 3 + 1 + 1 + 1 + 1 = \boxed{15 \text{ points}}$ .
- $16 \times 14 = \boxed{224 \text{ plants}}$ .
- 7 years younger means born 7 years later;  
 $1997 + 7 = \boxed{2004}$ .
- $a = 17 + 29 = 46 = 2 \times 23$ ,  $b = 17 + 29 = 46 = 2 \times 23$ ,  
and  $c = 46 + 46 = 4 \times 23$ , so  
 $a + b + c = 2 \times 23 + 2 \times 23 + 4 \times 23 = (2 + 2 + 4) \times 23$   
and  $d = 2 + 2 + 4 = \boxed{8}$ .

**ICTM 3rd Grade Mathematics Contest**  
(2011–2012)—Team Solutions (#2)

- $6 \times 440 = \boxed{2640 \text{ yards}}$ .
- Half of a minute is 30 seconds;  $30 \times 7 = \boxed{210 \text{ pictures}}$ .
- $50\text{¢} + 50\text{¢} + 25\text{¢} + 10\text{¢} + 10\text{¢} + 5\text{¢} + 5\text{¢} = \boxed{155\text{¢}}$ . (The question specifically asks for cents, so \$1.55 is not the correct answer to the question.)
- There are 7 days per week, so  $98 \div 7 = \boxed{14 \text{ weeks}}$ .
- $13 \times 8 + 3 = \boxed{107 \text{ books}}$ .
- The first row has 4 triangles and each subsequent row has 1 more triangle, so the 12th row will have  $12 - 1 = 11$  more triangles than the first row,  $4 + 11 = \boxed{15 \text{ triangles}}$ .
- The first six two-digit numbers are 10, 11, 12, 13, 14, and 15. Their sum is  $10 + 11 + 12 + 13 + 14 + 15 = \boxed{75}$ .
- $(6 + 14 + 19 + 22 + 24) \div 5 = 85 \div 5 = \boxed{17}$ .
- Label A as 1. For each intersection, label it with the sum of the labels of the intersections leading to it. The label at B is the number of ways to get there,  $\boxed{7}$ .
- The two-digit numbers greater than 80 that are multiples of 5 are 85, 90, and 95. Of these, only  $\boxed{95}$  has digits that add to  $9 + 5 = 14$ .
- $45 = 5 + (4 \times n) \Rightarrow 40 = 4 \times n \Rightarrow \boxed{10} = n$ .
- $8 \times \$1.75 = \boxed{\$14.00}$ .
- 5 days from yesterday is 4 days from today. The 4th day after Saturday is  $\boxed{\text{Wednesday}}$ .

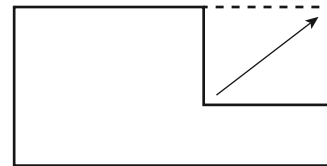


ICTM 3rd Grade Mathematics Contest  
(2011–2012)—Team Solutions (#2)

14. On the graph, 20 is the fifth mark on the vertical axis, so each mark represents 4. Dogs don't have wings; crows, robins, and cardinals each have 2 wings. There are 16 crows, 24 robins, and 20 cardinals, so  $16 + 24 + 20 = 60$  birds and  $60 \times 2 = \boxed{120 \text{ wings}}$ .
15.  $(99 + 10 + 19 + 4) \div 4 = 132 \div 4 = \boxed{33}$ .
16. Mason, Tyler, and 18 friends are a group of 20 people.  $20 \times \$14 = \boxed{\$280}$ .
17. 2 and 4 are the smallest 2 numbers, but the next-smallest number that they connect to is 8, for a total of  $2 + 4 + 8 = \boxed{14}$ . Trying to use 2 and 5 or 2 and 6 or 4 and 4 or 2 and 6 or 4 and 5 all give larger totals, as will anything using only one of 2, 4, 5, and 6, or none of them.
18. The numbers she writes are 1, 2, 3 (*first 3*), 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 (*second 3*), 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 (*third 3*), 24, 25, 26, 27, 28, 29, 30 (*fourth 3*), 31 (*fifth 3*),  $\boxed{32}$  (*sixth 3*).
19.  $804 - 377 = \boxed{427 \text{ cm}}$ .
20. Pictures 1–4 have 2, 4, 6, and 8 dots, respectively. Picture  $n$  has  $2 \times n$  dots. Picture 10 has  $2 \times 10 = \boxed{20 \text{ dots}}$ .


**ICTM 3rd Grade Mathematics Contest**  
(2011–2012)—Individual Solutions (#3)

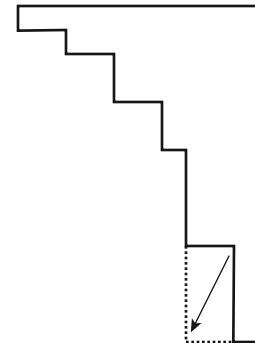
1. The 30th is  $30 - 4 = 26$  days after the 4th. 3 weeks is  $3 \times 7 = 21$  days, so 26 days after a given day is the same weekday as  $26 - 21 = 5$  days after that given day. 5 days after Saturday is **Thursday**.
2. The four smallest numbers are 11, 14, 14, and 15, which are connected (in several ways, using either 15), so the smallest sum is  $11 + 14 + 14 + 15 = \mathbf{54}$ .
3. The numbers she writes are 1, 2 (*1st 2*), 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 (*2nd 2*), 13, 14, 15, 16, 17, 18, 19, 20 (*3rd 2*), 21 (*4th 2*), 22 (*5th and 6th 2s*), 23 (*7th 2*), **24** (*8th 2*).
4.  $3 \times 9 + 7 \times 8 = 27 + 56 = \mathbf{83}$ .
5. The “step” in the figure can be pushed out as shown at the right without changing the perimeter of the figure. Once the step is pushed out, the result is a rectangle with height 30 and width 60, so perimeter  $2 \times (30 + 60) = \mathbf{180}$ .
6.  $9 \times \$14.75 = \mathbf{\$132.75}$ .
7. 5 dozen =  $5 \times 12 = 60$ , and  $60 \times \frac{2}{3} = \mathbf{40}$  apples.
8. Using as many 8s as possible,  $8 \times 6 + 2 \times 2 = 48 + 4 = 52$  with 8 hits. With 1 fewer 8,  $8 \times 5 + 5 \times 2 + 2 \times 1 = 40 + 10 + 2 = 52$  with 8 hits again. With 1 fewer 8 still,  $8 \times 4 + 5 \times 4 = 32 + 20 = 52$  with 8 hits again. Taking away more 8s will require at more 5s and/or 2s to be added than 8s were taken away, so **8 hits** is the least to score exactly 52.





**ICTM 3rd Grade Mathematics Contest**  
(2011–2012)—Team Solutions (#3)

1. The numbers in the pattern are each 3 more than the previous number, so the missing numbers are 10, 13, 22, and 25. Their sum is  $10 + 13 + 22 + 25 = \boxed{70}$ .
2. The Vikings scored  $10 + 13 + 7 + 10 = 40$  points. The Packers scored  $6 + 14 + 17 + 10 = 47$  points. So, the Vikings lost by  $47 - 40 = \boxed{7}$  points.
3. After 24 went home, there were  $60 - 24 = 36$  children left. After one fourth of those leave, there are three fourths left, or  $36 \times \frac{3}{4} = \boxed{27}$  children.
4. The letter I has  $\boxed{2}$  lines of symmetry. 
5. Label A as 1. For each intersection, label it with the sum of the labels of the intersections leading to it. B and D are each labeled 1. C is labeled 3. E is labeled  $1 + 1 + 3 + 1 + 1 = \boxed{7}$ , the number of ways to get there.
6. The factors of 66 are 1, 2, 3, 6, 11, 22, 33, and 66, so the cards that are not factors of 66 are 5, 7, and 13. Their sum is  $5 + 7 + 13 = \boxed{25}$ .
7. 15 gallons is  $15 \times 4 = 60$  quarts. Since each quart weighs 2 pounds, the 15 gallons weighs  $60 \times 2 = \boxed{120}$  pounds.
8. Subtracting off the 16 more right answers than wrong answers, there are  $40 - 16 = 24$  answers split equally between right and wrong, or  $24 \div 2 = 12$  right answers and 12 wrong answers. Putting the 16 more right answers than wrong answers back in, he got  $12 + 16 = \boxed{28}$  answers right.
9. Each “step” of the figure can be pushed out as shown at the right without changing the perimeter of the figure. Once all the steps are pushed out, the result is a rectangle with height 32 and width 23, so perimeter  $2 \times (32 + 23) = \boxed{110}$ .
10.  $437 + 391 + 267 = \boxed{1095}$  trees.
11. There are 60 minutes per hour, so 15 minutes in a quarter-hour, and  $3\frac{1}{4}$  hours is  $60 + 60 + 60 + 15 = \boxed{195}$  minutes.



ICTM 3rd Grade Mathematics Contest  
(2011–2012)—Team Solutions (#3)

12. The average of their birth years is half way between their birth years. Since their birth years are 10 years apart, each is 5 years away from 2001, the average. Since Evelyn is the younger sister, she was born later, so  $2001 + 5 = \boxed{2006}$ .
13. Since each small square is 36 square units, half of a small square is 18 square units. There are 9 halves of small squares that are shaded, so the area of the shaded region is  $9 \times 18 = \boxed{162 \text{ square units}}$ .
14. The largest three-digit number should have the largest possible hundreds digit. Since the number is between 300 and 600, the largest possible hundreds digit is 5. We then want the largest possible tens digit, so 7, and then the largest possible ones digit, so 6. The number is  $\boxed{576}$ .
15. Numbers ending in 9 happen every 10, from 9 up to 199.  $199 - 9 = 190$ , which is 19 intervals of 10. 19 intervals are between the  $19 + 1 = \boxed{20}$  numbers that end in 9.
16. 180 muffins is  $180 \div 12 = 15$  dozen, so she needed  $\boxed{15 \text{ cups}}$  of blueberries.
17. A dozen of an item is 12. A gross is a dozen dozens, so  $12 \times 12 = 144$ . A great gross is a dozen gross, so  $12 \times 144 = \boxed{1728}$ .
18. He can wear  $4 \times 2 \times 7 = \boxed{56 \text{ outfits}}$ .
19. The possible sums are from  $4 + 4 + 4 = 12$  to  $7 + 7 + 7 = 21$ , inclusive. Of those, 13, 17, and 19 are prime, so  $\boxed{3}$ .
20. She ran the perimeter of the field, which is  $2 \times (180 + 70) = \boxed{500 \text{ meters}}$ .