

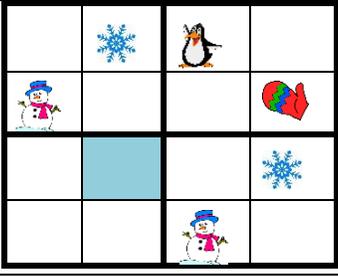


SOLUTIONS

Winter Activities

Winter season is full of winter sports and other exciting winter activities. Enjoy the challenge!

<i>Problems</i>	<i>Answer</i>
1. Seven children are having a snowball fight. Four more children join in. How many children are having the snowball fight now?	11 [children]
2. Kyra and Anna love to ice-skate during the holiday at the Bellevue ice-skating arena. They are standing in a line to rent their skating shoes. Kyra who was right in front of Anna said to Anna "There are 5 kids behind me". Anna said to Kyra, "There are 3 kids in front of me" How many kids are standing in the line?	8 [kids]
3. Kyle is keeping track of the amount of snowfall at the ski resort this month. So far it has snowed three times. The first snowfall was 6 inches. Last week there was a snowstorm that dumped 17 inches. The most recent snowfall was 11 inches. How many inches of snowfall has the resort seen so far this month?	34 [inches]
4. During the winter holidays, Amber went skiing 3 times. Lyrion went skiing twice as many times as Diana, who went skiing 2 more times than Amber. How many times did they all go to ski during the winter holidays? <i>Amber: 3 times. Diana: $3 + 2 = 5$ times. Lyrion: $2 \times 5 = 10$. Total: $3 + 5 + 10 = 18$ times.</i>	18 [times]
5. The penguins marched in the annual penguin parade. There was one penguin in the first row, two penguins in the second row and three penguins in the third row. If this pattern continued through the tenth row, how many penguins marched in the parade? <i>$1+2+3+4+5+6+7+8+9+10 = 55$</i>	55 [penguins]
6. Winter Olympics start on Friday, February 9 and will last for the next 16 days. On what day and date they will end? <i>16 days = 2 weeks + 2 days, thus 2 weeks and 2 days will be Sunday, Feb 25.</i>	Sunday, February 25
7. There are two times as many children as there are adults at the 'Winter Math Magic' festival. If there are 42 adults, how many people are there at the festival? <i>Number of children: $42 \times 2 = 84$. Thus, total number of people: $42 + 84 = 126$</i>	126
8. Shrima was reading Seattle Times on January 20 th 2018. She found an article about the upcoming SuperBowl. Can you help her to find out how many days are left until the SuperBowl day, which is on February 4, 2018 (include Jan. 20 and Feb 4)? <i>January has 31 days. Thus, $31-19 = 12$ days in Jan plus 4 days in February = 16 days</i>	16 days
9. Mr. Winterbaum's snowmobile shows 78269 miles on its odometer. How many more miles will it be before the odometer again shows a mileage count where each digit is different (non-repeating)? <i>The next time all digits are different, it will show 78290. $78290 - 78269 = 21$ miles</i>	21 miles

<p>10. The picture on the right is a simple Sudoku. In this Sudoku, each row, each column, and each of the large four rectangles can only have one of the 4 images (mitten, snowman, snowflake, penguin). What shape goes into the shaded rectangle?</p>		<p><i>Snowman</i></p>
<p>11.  Nordic combined is a winter sport in which athletes compete in cross-country skiing and ski jumping. In 2014 Jorgen Graabak finished his race in 23:28 min, Fabian Riessle in 23:29 minutes, Bjorn Kircheisen in 23:30 min, Magnus Moan 23:28.1, Bernard Gruber in 23:39 min. Who took the third place? Sort the time in increasing order: JG 23:28; MM 23:28.1; FR 23:29; BK 23:30; BG 23:39</p>	<p><i>Fabian Riessle</i></p>	
<p>12. 4 friends Alan, Bob, Calvin, Danny are practicing in their bobsleigh sledding. Their sled can fit exactly 4 kids. In how many ways can they sit in it? You can create a list: ABCD, ABDC, ACBD, ACDB, ADBC, ADCB 6 ways with Alan upfront. Their 4 possibilities to sit upfront, so $6 \times 4 = 24$ ways. Or draw slots for every seat in the sled. <u> </u> <u> </u> <u> </u> <u> </u>. There are 4 options to sit upfront, then after one person is chosen, only 3 options to choose the next seat, then 2 the one before last, and 1 the last seat. Thus, $4 \times 3 \times 2 \times 1 = 24$ ways.</p>	<p><i>24 ways</i></p>	
<p>13. Mr. Raymond paid \$82 for a sled and two pairs of snow gloves. The sled cost \$27.60. How much did 1 pair of snow gloves cost? If the sled cost \$27.60, then 1 pair of glove cost: $(82.00 - \\$27.60) \div 2 = \\$54.40 \div 2 = \\$27.20$</p>	<p><i>\$27.20</i></p>	
<p>14. During a sleepover party at figure skating school, friends were watching the greatest movies about figure skating, Ice Princess (1h 38 min) and The Cutting Edge (1h 42 min). If Daisha fell asleep half-way through the second movie, what percentage of the total time of both movies did she watch? Round your answer to the nearest percent. $1 \text{ h } 42 \text{ min} \div 2 = 51 \text{ min}$ Daisha watched from the second movie. Daisha watches $1 \text{ h } 38 \text{ min} + 51 \text{ min} = 2 \text{ h } 29 \text{ min}$ in total, out of $1 \text{ h } 42 + 1 \text{ h } 38 = 3 \text{ h } 20 \text{ min}$. Daisha watched $\frac{2 \text{ h } 29 \text{ min}}{3 \text{ h } 20 \text{ min}} = \frac{149 \text{ min}}{200 \text{ min}} = 74.50\% \approx 75\%$</p>	<p><i>75%</i></p>	
<p>15. Snow started falling at 8 p.m. at a rate of $1\frac{1}{2}$ inches per hour. At what time will the snow be $\frac{1}{2}$ foot deep? $1\frac{1}{2}$ inches per hour means 3 inches every 2 hours. Double 3 inches to become 6 inches in 4 hours. Thus 4 hours after 8 p.m. will be 12 am or midnight.</p>	<p><i>12 a.m. or midnight</i></p>	
<p>16. Mt. Rainier camping site has a total of 25 igloos and snow caves for winter camping experience. One igloo fits 4 people, 1 snow cave fits 2 people. How many snow caves are there if there are 70 people camping there and all igloos and snow caves are filled to their capacity? Let's pretend that all 25 places are igloos. $25 \times 4 = 100$ people, so we overcounted by $100 - 70 = 30$ people. The difference between the igloo and snow cave is 2 people. $30 \div 2 = 15$ snow caves. Double check $10 \text{ igloos} \times 4 = 40 \text{ people}$, $15 \text{ snow caves} \times 2 = 30 \text{ people}$. In total, we have 25 dwellings and 70 people.</p>	<p><i>15 snow caves</i></p>	
<p>17. Two friends Billy and Jerry went snowshoeing. Billy started the trail on 12 pm with the speed of 2.5 mph. One hour later his friend Jerry started to move on the same trail with the speed of 3mph. At what time will Jerry catch up with Billy? From 12pm to 1 pm Billy will move 2.5 miles. So the initial distance between the two friends was 2.5 miles. Jerry is gaining half a mile every hour. $2.5 \text{ miles} \div (3 - 2.5 \text{ mph}) = 5 \text{ hours}$. In 5 hours Jerry will catch up with Billy. Jerry will catch up with Billy at 6 pm.</p>	<p><i>6 p.m.</i></p>	

18. Ariel and Nathaniel are going on cross-country skiing trail from the opposite sides. The trail has a distance of 7 miles. The boys start their skiing at 9 am. Ariel is skiing with the average speed of 20 mph, Nathaniel with the speed 15 mph. At what time will they pass each other on this trail?

9:12 am

Initial distance is 7 miles. Each hour Ariel and Nathaniel are getting $20 + 15 = 35$ miles closer.

$7 \text{ miles} \div 35 \text{ mph} = 1/5 \text{ hour} = 12 \text{ minutes}$. At 9:12 am Ariel and Nathaniel will pass each other.

Solution is available on 2/2/2018 at www.mathinaction.org