

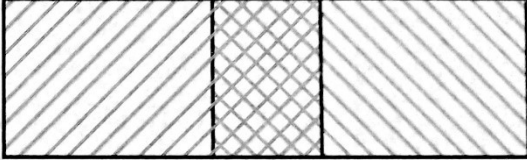
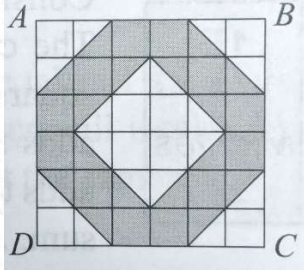
Exam for Grade 4

Exam Date: 9th Jan 2022

A 4 Points	Pablo has nickels and dimes and no other coins. He had five more dimes than nickels. Altogether, he has \$1.40. How many nickels does Pablo have?
B 5 Points	Each letter in the ordered list A, B, C, D, E, F, G, H represents a number. The numbers are not necessarily different, which means that two letters can represent the same number. The sum of the values of any three adjacent letters is 20. When $B = 6$ and $D = 9$, what is the value of F ?
C 7 Points	What number between 200 and 300 is exactly divisible by 3, by 5, and by 7?
D 10 Points	The sum of the digits of the number 789 is 24. How many 3-digit numbers have the sum of their digits equal to 24 including 789?
E 11 Points	A pyramid of $1\text{ cm} \times 1\text{ cm} \times 1\text{ cm}$ cubes is formed. The bottom layer has a 9×9 arrangement of these cubes. The second layer has a 7×7 arrangement. The third layer has a 5×5 arrangement. The fourth layer has a 3×3 arrangement. The top layer is a single cube. The sides and tops of the pyramid were painted (not the bottom). How many square centimeters in total were painted?

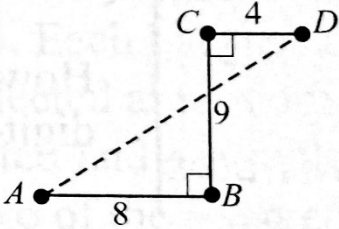
Exam for Grade 5

Exam Date: 9th January 2022

<p style="font-size: 2em; margin: 0;">A</p> <p style="margin: 0;">7 Points</p>	<p>Two 9×13 rectangles overlap as shown to form a 9×22 rectangle. What is the area of the overlap region?</p> <div style="text-align: right; margin-top: 10px;">  </div>																								
<p style="font-size: 2em; margin: 0;">B</p> <p style="margin: 0;">5 Points</p>	<p>In each box, the three numbers on the top row are used to obtain the number in the bottom row. If the same pattern is used in each box, what is the value of N?</p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>2</td><td>4</td><td>3</td></tr> <tr><td colspan="3">11</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>3</td><td>2</td><td>7</td></tr> <tr><td colspan="3">13</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>5</td><td>5</td><td>1</td></tr> <tr><td colspan="3">26</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>7</td><td>2</td><td>3</td></tr> <tr><td colspan="3">N</td></tr> </table> </div>	2	4	3	11			3	2	7	13			5	5	1	26			7	2	3	N		
2	4	3																							
11																									
3	2	7																							
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7	2	3																							
N																									
<p style="font-size: 2em; margin: 0;">C</p> <p style="margin: 0;">8 Points</p>	<p>Tracy has A quarters and B dimes with a total value of \$3.45. Tracy has more quarters than dimes. How many different values of A can Tracy have?</p>																								
<p style="font-size: 2em; margin: 0;">D</p> <p style="margin: 0;">10 Points</p>	<p>Jimmy is filling a pool using a large hose and a small hose. The large hose, working alone, could fill the pool in 3 hours. The small hose, working alone, could fill the pool in 5 hours. The small hose is turned on and allowed to run for an hour. Then the large hose is turned on, and both run until the pool is full. How many hours did it take to fill the pool?</p>																								
<p style="font-size: 2em; margin: 0;">E</p> <p style="margin: 0;">10 Points</p>	<p>Square $ABCD$ is composed of 36 squares of the same size, as shown. The area of square $ABCD$ is 180 square centimeters. What is the area, in square centimeters, of the shaded region?</p> <div style="text-align: right; margin-top: 10px;">  </div>																								

Exam for Grade 6

Exam Date: 9th January 2022

A 5 Points	The first three terms of a sequence are 12, 25 and 17. The fourth term, and each term thereafter, is the arithmetic mean of the previous three terms. Compute the first <i>non-integer</i> term and write it as a mixed number.									
B 6 Points	Ingrid begins a game by placing a marker on 0 on the number line. She flips a fair coin and moves the marker one unit right if heads and one unit left if tails. After 85 flips, Ingrid's marker is on +17. How many of the flips were heads?									
C 6 Points	In the square array at the right, the sum of the numbers in each row, column, and diagonal is the same. Find the product $a \times b \times c$. <table border="1" data-bbox="1334 821 1503 982"><tbody><tr><td>-3</td><td>+7</td><td>+5</td></tr><tr><td>a</td><td>+3</td><td>b</td></tr><tr><td>c</td><td>-1</td><td>+9</td></tr></tbody></table>	-3	+7	+5	a	+3	b	c	-1	+9
-3	+7	+5								
a	+3	b								
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D 7 Points	Find the value of the whole number N which satisfies $2^3 \times 4^N = 8^5$.									
E 10 Points	John travels from A to B to C to D along the solid straight paths shown with $\overline{AB} \perp \overline{BC}$ and $\overline{BC} \perp \overline{CD}$. If $AB = 8$ miles, $BC = 9$ miles, and $CD = 4$ miles, then how many miles would John save if he took the shorter direct route shown as the dotted straight-line segment \overline{AD} ? 									

Exam for Grade 7

Exam Date: 9th January 2022

<p>A</p> <p>8 Points</p>	<p>The areas of three small rectangles are shown in the diagram. The four small rectangles make up a larger, fifth rectangle, $ABCD$. If every measurement is a whole number, how many centimeters is the perimeter of the rectangle $ABCD$?</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;"> B <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">21 sq cm</td> <td style="padding: 5px;">33 sq cm</td> </tr> <tr> <td style="padding: 5px;">35 sq cm</td> <td style="padding: 5px;"></td> </tr> </table> A </div> <div style="margin-left: 20px;"> C <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table> D </div> </div>	21 sq cm	33 sq cm	35 sq cm							
21 sq cm	33 sq cm										
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<p>B</p> <p>6 Points</p>	<p>On Wednesday, the store sign said that the new video game would be available in 33 days. On what day of the week should the sign say that it will be available in only 2 days?</p>										
<p>C</p> <p>7 Points</p>	<p>In the addition shown, different letters represent different digits. What is the four-digit number $ABCD$?</p> <div style="text-align: right; margin-top: 20px;"> <table style="margin-left: auto; margin-right: auto;"> <tr><td style="text-align: right;">8</td><td>A</td></tr> <tr><td style="text-align: right;">2</td><td>B</td></tr> <tr><td style="text-align: right;">1</td><td>C</td></tr> <tr><td style="text-align: right;">+</td><td>$1 D 7 5 4$</td></tr> <tr><td style="text-align: right;">1</td><td>$2 3 4 5$</td></tr> </table> </div>	8	A	2	B	1	C	+	$1 D 7 5 4$	1	$2 3 4 5$
8	A										
2	B										
1	C										
+	$1 D 7 5 4$										
1	$2 3 4 5$										
<p>D</p> <p>9 Points</p>	<p>Tom's number had four digits in increasing order. The tens digit is the sum of the hundreds digit and the thousands digit. The ones digit is the sum of the other three. The sum of all four digits is 16. Find Tom's number.</p>										
<p>E</p> <p>10 Points</p>	<p>Consider the three-by-three grid shown (middle square removed). The counting numbers from 1 to 8 are placed in the squares (one number per square) so that the top row adds to 9, the bottom row adds to 21, the left column adds to 13, and the right column adds to 15. What is the sum: $A + B + C + D$?</p> <div style="text-align: right; margin-top: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">A</td> <td style="padding: 5px;"></td> <td style="padding: 5px;">B</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">X</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">D</td> <td style="padding: 5px;"></td> <td style="padding: 5px;">C</td> </tr> </table> </div>	A		B		X		D		C	
A		B									
	X										
D		C									

Exam for Grade 8

Exam Date: 9th January 2022

A 4 Points	If $(a \times b) + (a \times c) = 91$ and $b + c = 13$, then compute the value of $a + 2008$.
B 7 Points	Set $A = \{21, 22, 23, 24\}$ and set $B = \{12, 13, 14, 15, 16\}$. Set C contains all possible differences when an element from set A and an element from set B are subtracted <i>in either order</i> . How many elements are contained in set C ?
C 8 Points	Each of a , b , and c are to assigned one of the values 1, 2, or 4 without repetition. How many different values will be possible for the expression $(2a - b)^c$?
D 10 Points	Find the least value of whole number N , with $N > 10$, so that the expression $2N - 7$ is both a perfect square and a perfect cube.
E 11 Points	<p>Without slipping, a circle with radius 1 inch rolls once completely around the outside of the quadrilateral shown. The sides of the quadrilateral have lengths 6, 8, 9, and 12 inches.</p> <p>The center of the circle travels a path with length $P + Q\pi$. Find the sum $P + Q$.</p> 