

Island Numeracy Assessment

Grade 6+: Number Sense B, Fractions, Ratios and Percent

Collaborative Activity

Doughnut Percents

Age 7 to 14

This is one of a series of problems designed to develop students' team working skills. Other tasks in the series can be found by going to [this article](#).

0.3	20%	$\frac{9}{10}$	30%
0.8	25%	$\frac{1}{2}$	40%
$\frac{1}{5}$	$66\frac{2}{3}\%$	$\frac{1}{4}$	0.5
0.4	$\frac{4}{5}$	$\frac{3}{10}$	10%

0.6	$\frac{1}{4}$	0.8	$33\frac{1}{3}\%$
$\frac{1}{3}$	50%	$\frac{1}{10}$	$\frac{3}{4}$
75%	90%	$\frac{3}{5}$	80%
50%	0.6	0.25	30%

What are you aiming to do?

Every member of the team must end up with a set of four dominoes which join together to form a "doughnut" where touching ends have equal value. For example:

0.8	40%	$\frac{2}{5}$
80%		$\frac{1}{4}$
0.3	30%	25%

The task is only successfully completed when everyone on the team has completed their domino doughnut.

You will need to work in a team of four. If you have a fifth person available - use them as an observer (see guidance below).

How to play

In silence, distribute the 16 [domino cards](#) randomly amongst the team (four cards each).

Players pass dominoes to other team members in order to help one another complete their doughnut.

- Each member of the team starts with four dominoes in front of them.
- The dominoes in front of each person should be visible to everyone.
- Team members can only give dominoes; they cannot take dominoes from someone else.
- Each team member must have at least two dominoes in front of them at all times.
- No one can talk or give non-verbal signals to other members of the team.

Use an observer to check that the team obeys the rules and to keep a record of when members of the team help someone else (rather than, for example, when they just pass a piece on without looking at what the other person or team actually needs).

Observers can place one of the [hint cards](#) in the middle, if after a period of five minutes the team is not making any progress.

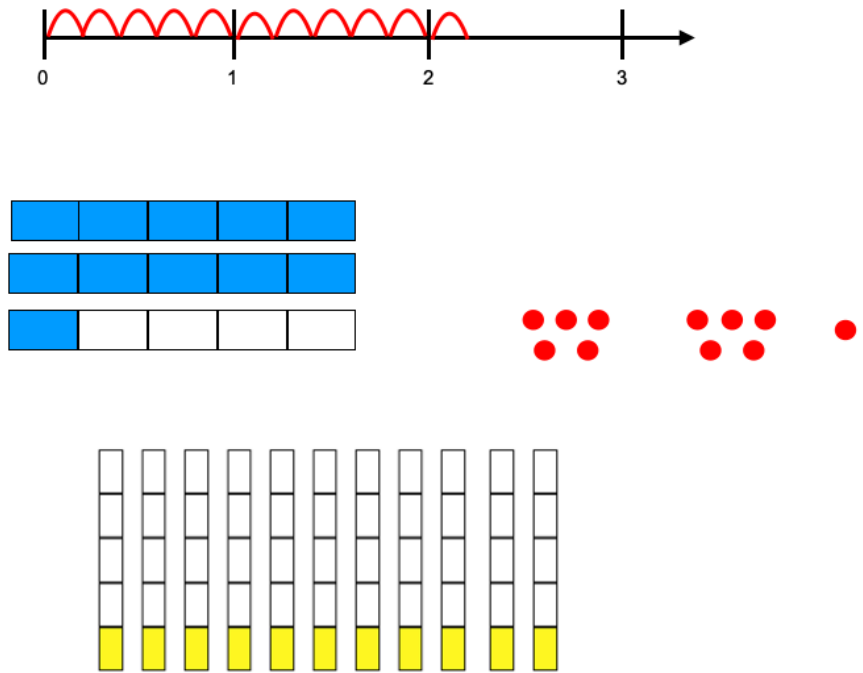


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Assessment Question	Answer Key																																																																																																				
<p>1. What percentage of the crossword grid shown below is shaded grey?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;">1</td> <td style="width: 10%;">2</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;">3</td> <td style="width: 10%;">4</td> <td style="width: 10%;">5</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td>7</td> <td></td> <td>8</td> <td></td> <td></td> <td>9</td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td>11</td> <td>12</td> <td></td> <td></td> <td></td> <td>13</td> <td>14</td> </tr> <tr> <td></td> <td>15</td> <td>16</td> <td></td> <td>17</td> <td></td> <td></td> <td>18</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>19</td> <td>20</td> <td></td> <td></td> <td>21</td> <td></td> <td></td> <td></td> </tr> <tr> <td>22</td> <td>23</td> <td></td> <td></td> <td></td> <td></td> <td>24</td> <td></td> <td></td> <td></td> </tr> <tr> <td>25</td> <td></td> <td></td> <td></td> <td>26</td> <td>27</td> <td></td> <td>28</td> <td>29</td> <td></td> </tr> <tr> <td>30</td> <td></td> <td></td> <td>31</td> <td></td> <td></td> <td>32</td> <td></td> <td>33</td> <td>34</td> </tr> <tr> <td></td> <td>35</td> <td>36</td> <td></td> <td></td> <td></td> <td>37</td> <td>38</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>39</td> <td></td> <td></td> <td></td> <td></td> <td>40</td> <td></td> <td></td> </tr> </table> </div>		1	2			3	4	5			6			7		8			9		10			11	12				13	14		15	16		17			18					19	20			21				22	23					24				25				26	27		28	29		30			31			32		33	34		35	36				37	38					39					40			<p style="color: red; font-weight: bold;">32%</p>
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<p>2. What percent is shaded? Can you represent this amount in another way?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table> </div>																					<p style="color: red; font-weight: bold;">48%</p> <p style="color: red; font-weight: bold;">Other ways</p> <ul style="list-style-type: none"> - 12/25 - 24/50 - 0.48 - Hundred grid shaded 																																																																																

3. Choose any improper fraction. Create three or more representations of that fraction. At least two of the representations should be similar. Describe how the representations are similar. Why are the other representations not quite as similar?



I chose the fraction $11/5$. I think that the two pictures with rectangles are similar since they both use rectangles. The others do not use rectangles.

I think the picture with two full rectangles and part of another is a lot like the 11 counters in 2 groups and one loose counter since each time there are 2 whole things and $1/5$ of another.

The other rectangles are different because they show 11 fifths.

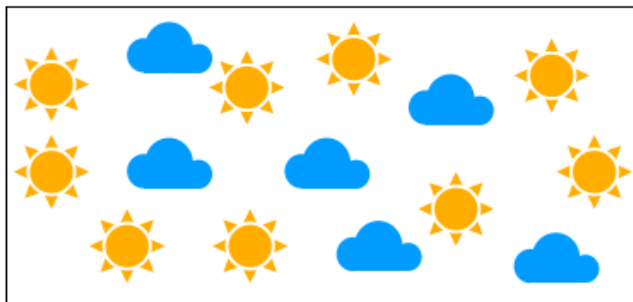
Marian Small Open Questions for Rich Math Lessons: Number Strand
Grade 4,5,6 WNCB
p.120

image adapted

4. Represent 25% in three different ways.

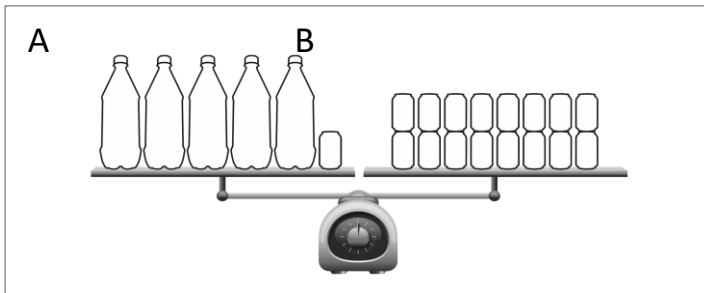
$1/4$, $25/100$, drawing box with a quarter shaded in, number line, circle with 25% shaded in etc.

5. What is the ratio of  to  below?



3 : 2
9 : 6

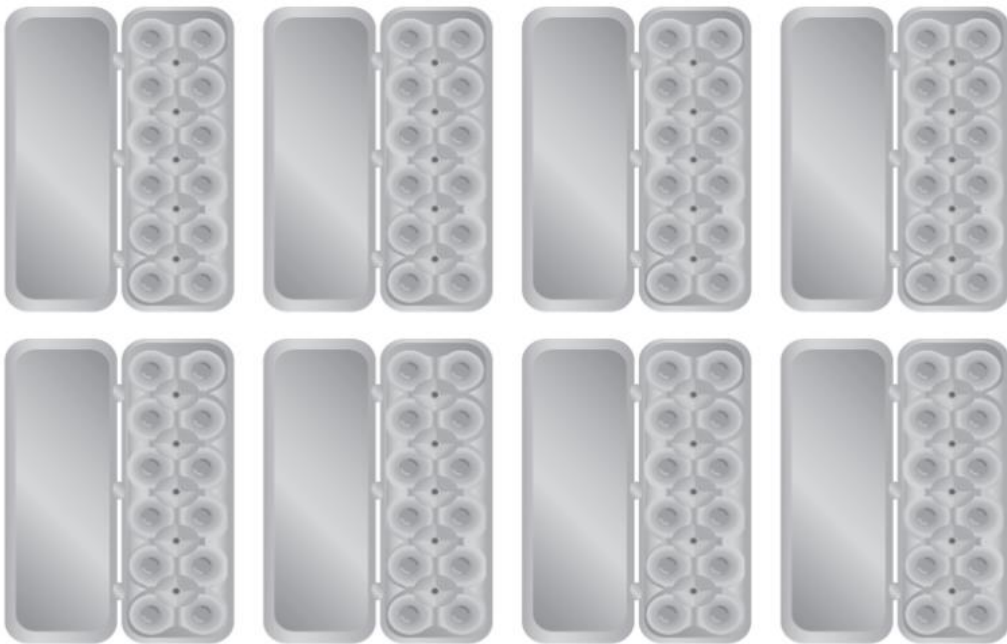
6. How many do you need to remove from side B to keep the scale balanced?



Show how you know.

Remove one object from side B to keep it balanced.

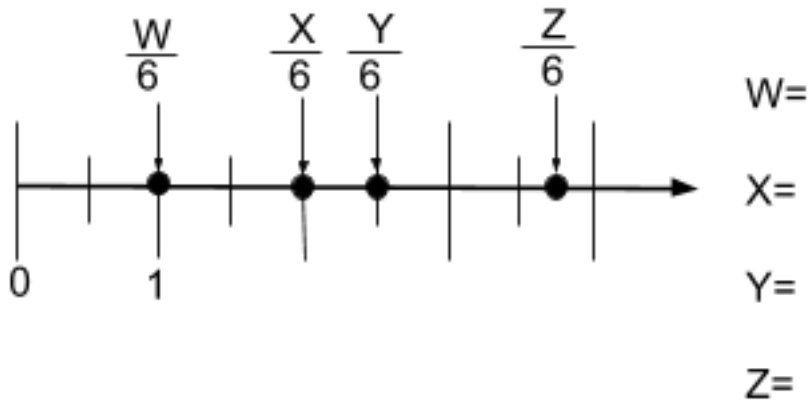
7. A farmer fills $3 \frac{5}{12}$ of the egg cartons shown below with eggs.



How many eggs in total does the farmer have?

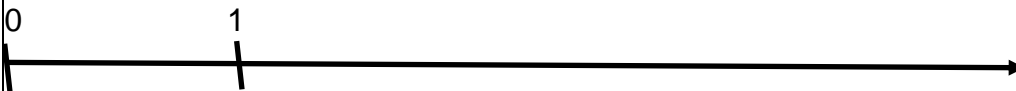
41

8. Using the number line, determine what the value of W, X, Y, Z could be for each dot on the number line below.



W: $\frac{6}{6}$
 X: $\frac{12}{6}$
 Y: $\frac{15}{6}$ or $2\frac{1}{2}$
 Z: $\frac{22}{6}$ or $\frac{23}{6}$

9.



Write a mixed number that would represent the image above.

$2\frac{4}{5}$

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Performance Task

Which store would you rather buy jeans from?

Store A

30% off



Store B

\$30 off

Show your understanding.

Answers will depend on the original price of the jeans. The deal is the same with a price of \$100. A 30% discount on any original price over \$100 is the best deal and \$30 off for any original price under \$100 is the best deal.