

# Shape Problems Challenge Cards



Shape Problems



Find two pentagon numbers to complete the calculation below. Can you find more than one answer?

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = 7.6$$

Shape Problems



Find two pentagon numbers to complete the calculation below. Can you find more than one answer?

$$\underline{\hspace{2cm}} + 0.1 = \underline{\hspace{2cm}}$$

Shape Problems



Find two hexagon numbers to complete the calculation below.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = 4.46$$

Shape Problems



Which shape has the smallest difference between its largest and smallest numbers?

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Shape Problems



Find two hexagon numbers to complete the calculation below. Can you find more than one answer?

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = 0.08$$

Shape Problems



Charley chooses the three biggest numbers from one type of shape. When he adds them together, his answer is more than 9 but less than 10. Did his numbers come from pentagons, hexagons or octagons? Explain how you know.

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Shape Problems



How many combinations of three different hexagon numbers can you find that total more than 6.7 but less than 7.6?

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Shape Problems



What is the largest difference you can find between any two numbers on the sheet?

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Shape Problems



Kieran chooses two numbers from one type of shape and one number from a different shape. What is the highest total he could make? Explain the strategy you used to work out the answer.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

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Shape Problems



What are the largest and smallest totals you can make using three numbers from the same shape?

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Shape Problems



Find two octagon numbers to complete this calculation.

$$\underline{\hspace{2cm}} - 1.19 = \underline{\hspace{2cm}}$$

Shape Problems



Find two octagon numbers to complete this calculation.

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = 0.172$$

Shape Problems



Find four different numbers to complete this calculation.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

Shape Problems



What is the smallest difference you can find between two numbers from different shapes?

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Shape Problems



When adding octagon numbers together, Marianne says that her answer will always have thousandths because all of the octagon numbers have thousandths. Is she right? Prove how you know.

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Shape Problems



Shaida says that if she adds any four of the numbers from the sheet together, she will always get an answer higher than 8. Is she right? Explain how you know.

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Shape Problems



Find two different pairs of numbers that could complete this calculation.

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = 0.027$$

Can you use your answer to predict another pair of numbers, not on the sheet, that would complete this calculation?

Shape Problems



Find pairs of numbers on the sheet to complete these calculations. You may only use each number once.

one whole =  $\underline{\hspace{2cm}} - \underline{\hspace{2cm}}$

one tenth =  $\underline{\hspace{2cm}} - \underline{\hspace{2cm}}$

one hundredth =  $\underline{\hspace{2cm}} - \underline{\hspace{2cm}}$

one thousandth =  $\underline{\hspace{2cm}} - \underline{\hspace{2cm}}$

# Shape Problems Challenge Cards Answers

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| <p>1. Find two pentagon numbers to complete the calculation below. Can you find more than one answer? ★</p> <p><math>4.3 + 3.3 = 7.6</math><br/><math>4.2 + 3.4 = 7.6</math></p>   | <p>2. Find two pentagon numbers to complete the calculation below. Can you find more than one answer? ★</p> <p><math>4.2 + 0.1 = 4.3</math><br/><math>3.3 + 0.1 = 3.4</math></p>   |
| <p>3. Find two hexagon numbers to complete the calculation below. ★</p> <p><math>2.43 + 2.03 = 4.46</math></p>   | <p>4. Which shape has the smallest difference between its largest and smallest numbers? ★</p> <p>hexagons</p>  |
| <p>5. Find two hexagon numbers to complete the calculation below. Can you find more than one answer? ★</p> <p><math>3.21 - 3.13 = 0.08</math><br/><math>2.31 - 2.23 = 0.08</math></p>  | <p>6. Charley chooses the three biggest numbers from one type of shape. When he adds them together, his answer is more than 9 but less than 10. Did his numbers come from pentagons, hexagons or octagons? Explain how you know. ★</p> <p>Charley's numbers came from octagons because the three biggest pentagon numbers add up to 14.1, which is more than 10, and the three biggest hexagon numbers add up to 8.77, which is less than 9. The three biggest octagon numbers add up to 9.545, which is more than 9 but less than 10.</p> |
| <p>1. How many combinations of three different hexagon numbers can you find that total more than 6.7 but less than 7.6? ★★</p> <p>Multiple answers possible. There are 7 possible combinations:</p> <p><math>2.03 + 2.23 + 3.13</math>, <math>2.03 + 2.23 + 3.21</math>,<br/><math>2.03 + 2.31 + 2.43</math>, <math>2.03 + 2.31 + 3.13</math>,<br/><math>2.03 + 2.31 + 3.21</math>, <math>2.03 + 2.43 + 3.13</math>,<br/><math>2.23 + 2.31 + 2.43</math></p> | <p>2. What is the largest difference you can find between any two numbers on the sheet? ★★</p> <p>Largest difference: <math>5.6 - 2.03 = 3.57</math></p>   |

# Shape Problems Challenge Cards Answers

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| <p>3. Kieran chooses two numbers from one type of shape and one number from a different shape. What is the highest total he could make? Explain the strategy you used to work out the answer.</p> <p>The highest total is 13.321. Children's own explanations, such as: I worked out the total of the two largest numbers from each shape, then chose the largest total and added it to the largest number from the remaining two shapes.</p> | <p>4. What are the largest and smallest totals you can make using three numbers from the same shape?</p> <p>Largest total: <math>5.6 + 4.3 + 4.2 = 14.1</math></p> <p>Smallest total: <math>2.03 + 2.23 + 2.31 = 6.57</math></p>  |
| <p>5. Find two octagon numbers to complete this calculation.</p> $3.421 - 1.19 = 2.231$   | <p>6. Find two octagon numbers to complete this calculation.</p> $2.403 - 2.231 = 0.172$  |
| <p>1. Find four different numbers to complete this calculation.</p> $4.2 + 2.31 = 3.3 + 3.21$   | <p>2. What is the smallest difference you can find between two numbers from different shapes?</p> $2.231 - 2.23 = 0.001$  |
| <p>3. When adding octagon numbers together, Marianne says that her answer will always have thousandths because all of the octagon numbers have thousandths. Is she right? Prove how you know.</p> <p>Children's own responses, such as: Marianne is not right because if you add all of the octagon numbers together, there are 10 thousandths which are regrouped into 1 hundredth. The answer is 16.22, which has 0 thousandths.</p>        | <p>4. Shaída says that if she adds any four of the numbers from the sheet together, she will always get an answer higher than 8. Is she right? Explain how you know.</p> <p>Children's own responses, such as: Shaída is right because the smallest number on the sheet is more than 2 and <math>4 \times 2 = 8</math> so even if you added the four smallest numbers, the answer would still be more than 8.</p> |

# Shape Problems Challenge Cards Answers

5. Find two different pairs of numbers that could complete this calculation. ★★★

Can you use your answer to predict another pair of numbers, not on the sheet, that would complete this calculation?

$$2.43 - 2.403 = 0.027$$

$$3.13 - 3.103 = 0.027$$

Multiple answers possible – accept any pair of numbers where the ones and tenths digits are the same but the first has 3 hundredths

6. Find pairs of numbers on the sheet to complete these calculations. You may only use each number once. ★★★

$$\text{one whole} = 3.3 - 2.3$$

$$\text{one tenth} = 4.3 - 4.2$$

$$\text{one hundredth} = 2.31 - 2.3$$

$$\text{one thousandth} = 2.231 - 2.23$$