

# **Math Challenge II: Geometry**

**Answer Key**

**Areteem Institute**

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## Chapter 1. Geometry with Algebraic Methods

### Practice Questions:

**1.15:** 24

**1.16:** 4, 9, 5

**1.17:**  $EF = 23, GH = 26$

**1.18:** 13, 14, 15

**1.19:** 6, 8, and  $2\sqrt{5}$ .

**1.20:** 28.

**1.21:**  $\frac{15 + 6\sqrt{2}}{4}$

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## Chapter 2. Geometric Transformations

### Practice Questions:

**2.12:** Omitted

**2.13:** Omitted

**2.14:** Omitted

**2.15:** Omitted

**2.16:** Omitted

**2.17:** 15

**2.18:** 1 : 2

**2.19:** 1 : 2

**2.20:**  $45^\circ$

**2.21:** Omitted

**2.22:**  $8 + \sqrt{14}$

**2.23:** 2

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## Chapter 3. Transformations Continued

### Practice Questions:

**3.9:** 1:1

**3.19:** 3

**3.10:**  $30^\circ$  or  $150^\circ$

**3.20:**  $\sqrt{3}$

**3.11:** 5

**3.21:** 16

**3.12:** 25

**3.22:**  $90^\circ$

**3.13:** Omitted

**3.23:** The ratio is 4 : 3

**3.14:** Omitted

**3.24:** 3.14

**3.15:** 30

**3.25:** 4

**3.16:** 4.5

**3.26:** Omitted

**3.17:**  $90^\circ$

**3.27:**  $45^\circ$

**3.18:** 12

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## Chapter 4. Trigonometry

### Practice Questions:

**4.12:** 2

**4.13:**  $\sqrt{2}$

**4.14:**  $-1/16$

**4.15:**  $\sqrt{3}$

**4.16:** 2017

**4.17:**  $5/9$

**4.18:** 30-60-90 triangle

**4.19:** 1

**4.20:**  $\frac{1}{2}$

**4.21:** Omitted

**4.22:** 7

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## Chapter 5. Menelaus and Ceva

### Practice Questions:

**5.11:** 2 : 1

**5.16:**  $10^\circ$

**5.12:**  $5/42$

**5.17:** Omitted

**5.13:** Omitted

**5.18:**  $30^\circ$

**5.14:** 8

**5.19:** Omitted

**5.15:**  $7/15$

**5.20:** Omitted