Check-out Kapitel VI

Schätze dich mithilfe der Checkliste ein.

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|  | Checkliste |  |  |  | Lerntipps | zum Nacharbeiten |
| 1. | Ich kann die Winkeltypen erkennen und zur Bestimmung von Winkeln verwenden. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 2 auf Seite 183 | Seite 204: A. 1, 2 und 3 sowie Seite 205: A. 8 |
| 2. | Ich kann Vermutungen zu Winkelsummen in der Geometrie überprüfen. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 2 auf Seite 187 | Seite 205: A. 9 und A. 11, Seite 206: A. 15 sowie Seite 207: A. 19 |
| 3. | Ich kann Dreiecke mithilfe von Zirkel und Lineal konstruieren und mein Vorgehen beschreiben. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 192 | Seite 204: A. 4 |
| 4. | Ich kann mithilfe von Dreiecken Anwendungsaufgaben lösen. | 🞎 | 🞎 | 🞎 | Beispiel 2 auf Seite 192 | Seite 205: A. 12 und 13 sowie Seite 206: A. 14 |
| 5. | Ich kann Dreiecke auf Kongruenz untersuchen. | 🞎 | 🞎 | 🞎 | Beispiel auf Seite 197 | Seite 211 Runde 1: A. 4 |
| 6. | Ich kann mithilfe der Kongruenzsätze mathematische Sätze beweisen. | 🞎 | 🞎 | 🞎 | Lehrtext auf Seite 200 und Beispiel auf Seite 201 | Seite 204: A. 6,Seite 205: A. 7 undSeite 206: A. 16 |

Überprüfe deine Einschätzung.

Zu 1. **Winkeltypen erkennen und Winkel bestimmen**

Die Geraden g und h sind parallel zueinander. Gib die fehlenden acht Winkelgrößen an. Benenne jeweils auch die Winkeltypen.

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Zu 2. **Vermutungen zu Winkelsummen überprüfen**

Begründe mithilfe einer Skizze, dass die Innenwinkelsumme in jedem Achteck 1080° beträgt.

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Zu 3. **Dreiecke mithilfe von Zirkel und Lineal konstruieren**

a) Konstruiere ein Dreieck mit den Angaben , und . Beschreibe dein Vorgehen.

b) Ist die Konstruktion eindeutig? Begründe.

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Zu 4. **Anwendungsprobleme mithilfe von Dreiecken lösen**

Ein Schatz ist vergraben. Vom Schatz aus sieht man die Kirche (K) unter einem Winkel von N33°O (das heißt: 33° in der Nordrichtung nach Osten) und den Baum (B) unter N45°W (das heißt: 45° in der Nordrichtung nach Westen).

Zeichne ein, wo der Schatz liegt. Erstelle zunächst eine Planfigur.



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Zu 5. **Dreiecke auf Kongruenz untersuchen**

Gib an, welche der folgenden Dreiecke zueinander kongruent sind. Notiere, welchen Kongruenzsatz du als Begründung verwendet hast.

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Zu 6. **Mathematische Sätze mithilfe der Kongruenzsätze beweisen**

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| In einem beliebigen Dreieck (die dicken Strecken) werden durch die drei Ecken jeweils Parallelen zu den gegenüberliegenden Seiten gezeichnet. Auf diese Weise entsteht ein größeres Dreieck mit vier Innendreiecken.Beweise, dass alle vier Innendreiecke kongruent sind. |  | I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE96733471_G_CO_K06_A6.png |

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Check-out Kapitel VI – Lösungen

1 Da die Geraden g und h parallel sind, kann man die Winkel z.B. in folgender Reihenfolge bestimmen:

 (Stufenwinkel zu 70°) (Scheitelwinkel zu β)

 (Nebenwinkel zu γ und 45°) (Stufenwinkel zu α)

 (Scheitelwinkel zu δ) (Scheitelwinkel zu 78°)

 (Wechselwinkel zu φ) (Nebenwinkel zu μ)

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| 2 Man weiß, dass die Innenwinkelsumme in einem Dreieck 180° entspricht. An der Skizze erkennt man, dass man jedes Achteck in sechs Dreiecke zerlegen kann. Damit ergibt sich für die Innenwinkelsumme eines Achtecks: . |  | I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE96733471_G_CO_K06_A2_Loes.png |

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| 3 a) Konstruktionsbeschreibung:1. Zeichne die Strecke .2. Trage den Winkel an dem Punkt A an und zeichne die Halbgerade h beginnend im Punkt A.3. Zeichne einen Kreis mit dem Radius um den Punkt B.4. Der Schnittpunkt des Kreises mit der Halb­geraden aus dem 2. Konstruktionsschritt ist der Punkt C des Dreiecks.5. Verbinde die Punkte B und C.6. Beschrifte das Dreieck vollständig.b) Ja, das Dreieck ist eindeutig, weil der Kreis mit dem Radius nur einen Schnittpunkt mit der Halbgeraden h hat (da ). |  | I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE96733471_G_CO_K.png |

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5 (2) und (3) wegen des Kongruenzsatzes sws (in Dreieck (3) ist die fehlende Winkelangabe 30° groß (

(4) und (6) wegen des Kongruenzsatzes wsw (in Dreieck (4) ist die fehlende Winkelangabe 80° groß

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| 6 Die Dreiecke ACB und FCA sind aufgrund des Kongruenzsatzes wsw kongruent: Es gilt  (identische Seite), (Wechselwinkel, da ) und (Wechselwinkel, da ) und somit der Satz wsw.Analog kann man mit den Dreiecken ACB und CEB bzw. ACB und ABD argumentieren, sodass insgesamt alle vier Dreiecke kongruent sind. |  | I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE96733471_G_CO_K06_A6_Loes.png |