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|  | IV Terme und Gleichungen, Check-out |  |  |
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Check-out Kapitel IV

Schätze dich mithilfe der Checkliste ein.

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|  | Checkliste |  |  |  | Lerntipps | zum Nacharbeiten |
| 1. | Ich kann Terme mit einer Variablen aufstellen und Werte berechnen. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 2 auf Seite 125 | Seite 154: A1;Seite 155: A10 undSeite 159 Runde 1: A1 |
| 2. | Ich kann Terme zu gleichwertigen Termen vereinfachen. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 3 auf Seite 130 | Seite 155: A9 a) (1), (2); Seite 154: A3 |
| 3. | Ich kann Terme durch Ausmultipli­zieren bzw. Ausklammern (Anwenden des Distributivgesetzes) vereinfachen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 134 | Seite 154: A4 undSeite 155: A12 |
| 4. | Ich kann Terme zu Anwendungs­situationen aufstellen und begründen, ob zwei Terme gleichwertig (äquivalent) sind. | 🞎 | 🞎 | 🞎 | Beispiel 2 auf Seite 134 | Seite 156: A19 undSeite 159 Runde 1: A2 |
| 5. | Ich kann Gleichungen mithilfe des systematischen Probierens und des Rückwärtsrechnens lösen. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 2 auf Seite 138 | Seite 139: A5 undSeite 154: A5 |
| 6. | Ich kann Gleichungen mithilfe von Äquivalenzumformungen lösen und die Probe machen. | 🞎 | 🞎 | 🞎 | Beispiel auf Seite 141 | Seite 154: A6 und A8 |
| 7. | Ich kann Bruchterme vereinfachen und Bruchgleichungen lösen. | 🞎 | 🞎 | 🞎 | Beispiele 1 bis 3 auf Seite 145 | Seite 147: A14;Seite 159 Runde 1: A3 e);Seite 159 Runde 2: A1 c) |
| 8. | Ich kann mithilfe von Termen und Gleichungen Anwendungsaufgaben lösen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 149Beispiel 2 auf Seite 150 | Seite 159 Runde 1: A4;Seite 159 Runde 2: A3 |

Überprüfe deine Einschätzung.





Zu 1. **Terme mit einer Variablen aufstellen und Werte berechnen**

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| Aus Plättchen in Form von Dreiecken werden Figuren gelegt.a) Bestimme, wie viele Plättchen man für die 4. Figur braucht.b) Stelle einen Term auf, der angibt, wie viele Plättchen man für die n-te Figur braucht.c) Berechne, wie viele Plättchen man benötigt, wenn man die 300. Figur legen möchte. |  |  |

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|  | IV Terme und Gleichungen, Check-out |  |  |
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Zu 2. **Terme vereinfachen**

Vereinfache den Term.

a) b) c)

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Zu 3. **Ausmultiplizieren und Ausklammern**

a) Vereinfache den Term durch Ausmultiplizieren.

1) 2)

b) Klammere mithilfe des Distributivgesetzes sinnvoll aus.

1) 2)

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Zu 4. **Terme aufstellen und Gleichwertigkeit begründen**

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| Anna zeichnet Muster aus Häusern ( I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE84733471_G_K07_200_02_V2.png ), indem sie diese aneinander­reiht. Sie berechnet die Anzahl der Striche, bei x Häusern mit dem Term . Thomas behauptet, er könne die Zahl der Striche bei x Häusern schneller mit dem Term berechnen.a) Erläutere mithilfe einer Skizze, welche Überlegungen sich Anna und Thomas beim Aufstellen ihres Terms jeweils gemacht haben müssen.b) Zeige, dass die beiden Terme gleichwertig (äquivalent) sind. |  | I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE84733471_G_K07_200_02.png |

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Zu 5. **Gleichungen mithilfe des systematischen Probierens und des Rückwärtsrechnens lösen**

a) Löse die Gleichung durch systematisches Probieren: .



b) Löse durch Rückwärtsrechnen: .

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Zu 6. **Gleichungen mithilfe von Äquivalenzumformungen lösen**

Löse die Gleichung mithilfe von Äquivalenzumformungen und mache die Probe.



a) b)



c)  d)

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Zu 7. **Bruchterme vereinfachen und Bruchgleichungen lösen**

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| a)Gib an, für welche Werte für x der Term definiert ist, und fasse zu einem Bruch zusammen.  |  | b)Löse die Bruchgleichung schrittweise und mache die Probe.  |

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Zu 8. **Mithilfe von Termen Anwendungsaufgaben lösen**

Ben ist heute 35 Jahre alt. Seine Schwester Lisa ist heute 8 Jahre alt und sein Bruder Joshua ist heute 12 Jahre alt.

Bestimme, in wie vielen Jahren Lisa und Joshua zusammen genauso alt wie Ben sind.

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|  | IV Terme und Gleichungen, Check-out | Lösungen |  |
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Check-out Kapitel IV, S 102 – S 105

1 a) Man benötigt 16 Plättchen.

b) n: Anzahl der Dreiecke in der untersten Reihe mit der Spitze nach oben.

Man benötigt Plättchen, um die n-te Figur zu legen.

c) , also . Man benötigt 90 000 Plättchen, wenn man die 300. Figur legen wollte.

2 a)

b)

c)

3 a) 1)
2)

b) 1)
2)

4 a) x steht für die Anzahl der Häuser

 12 entspricht den Strichen für 1 Haus.

 10 entspricht den Strichen, die für jedes weitere Haus benötigt werden.

 Pro neuem Haus werden 10 Striche benötigt und für das erste Haus noch zusätzliche
 2 Striche.

b)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 5 a)

|  |  |
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| x |  |
| 10 | 110 |
| 20 | 230 |
| 30 | 350 |
| 25 | 290 |
| 26 | 302 |

Die Zahl 26 ist die richtige Lösung. |  | b) I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE96733471_G_CO_K05_A5_Loes.pngDie Zahl – 30 ist die richtige Lösung. |

6 a)

Probe: und . Die Lösung ist richtig.

b)

Probe: und . Die Lösung ist richtig.

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c)

Probe: und . Die Lösung ist richtig.

(Alternativ kann man die erste Gleichung auch mit der Zahl 8 multiplizieren, um eine Gleichung ohne Brüche zu erhalten.)

d)

Probe: und . Die Lösung ist richtig.

(Alternativ kann man die erste Gleichung auch mit der Zahl 5 multiplizieren, um eine Gleichung ohne Dezimalzahlen zu erhalten.)

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| 7 a) Der Term ist definiert für alle und .       |  | b)    Probe:  |

8 Gesucht: x: die Anzahl der Jahre, die vergehen

Gegeben: Lisa ist heute 8 Jahre alt.

Joshua ist heute 12 Jahre alt.

Ben ist heute 35 Jahre alt.

Rechenweg:

Antwort: In 15 Jahren sind Lisa und Joshua zusammen genauso alt wie Ben. Lisa ist dann 23 Jahre alt, Joshua 27 Jahre alt und Ben ist dann 50 Jahre alt.