Check-out Kapitel V

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 147 | Seite 171: A. 1,  Seite 172: A. 10 und  Seite 177 Runde 1: A. 1 |
| 2. | Ich kann Terme zu gleichwertigen Termen vereinfachen. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 3 auf Seite 152 | Seite 172: A. 9 a) und b), Seite 171: A. 3 und  Seite 177 Runde 2: A. 1 |
| 3. | Ich kann Terme durch Ausmultiplizieren bzw. Ausklammern (Anwenden des Distributivgesetzes) vereinfachen. | 🞎 | 🞎 | 🞎 | Beispiel 1 auf Seite 156 | Seite 171: A. 4 und  Seite 172: A. 12 |
| 4. | Ich kann Terme zu Anwendungssituationen aufstellen und begründen, ob zwei Terme gleichwertig (äquivalent) sind. | 🞎 | 🞎 | 🞎 | Beispiel 2 auf Seite 156 | Seite 173: A. 19 und  Seite 174: A. 20 |
| 5. | Ich kann Gleichungen mithilfe des systematischen Probierens und des Rückwärtsrechnens lösen. | 🞎 | 🞎 | 🞎 | Beispiele 1 und 2 auf Seite 160 | Seite 171: A. 5 |
| 6. | Ich kann Gleichungen mithilfe von Äquivalenzumformungen lösen und die Probe machen. | 🞎 | 🞎 | 🞎 | Beispiel auf Seite 163 | Seite 171: A. 6 und 8 |
| 7. | Ich kann mithilfe von Termen und Gleichungen Anwendungsaufgaben lösen. | 🞎 | 🞎 | 🞎 | Beispiel auf Seite 167 | Seite 177 Runde 1: A. 4 und  Seite 177 Runde 2: A. 4 |

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. |  | I:\Klett_WORD\733471_LS7 NW_Checkouts\733471_Schmuckelemente\SE96733471_G_CO_K05_A1.png |

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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 aneinander reiht. 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.** 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 viel Jahren Lisa und Joshua zusammen genauso alt wie Ben sind.

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Check-out Kapitel V – Lösungen

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.-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)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 a)   |  |  | | --- | --- | | 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.png  Die Zahl – 30 ist die richtige Lösung. |

6 a)

Probe: und . Die Lösung ist richtig.

b)

Probe: und . Die Lösung ist richtig.

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.)

7 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.

Ansatz:

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