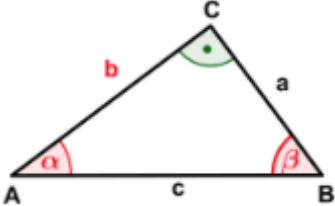
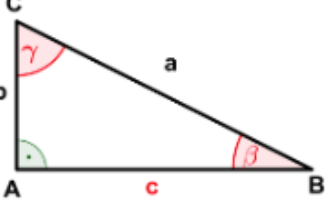
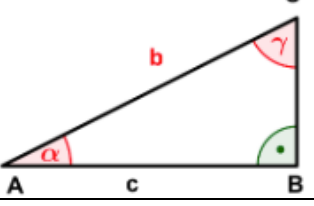
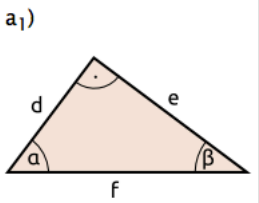
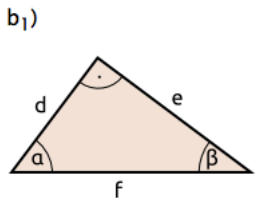
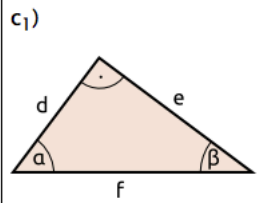
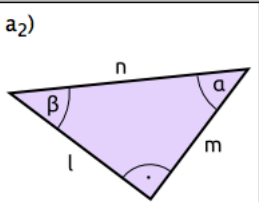
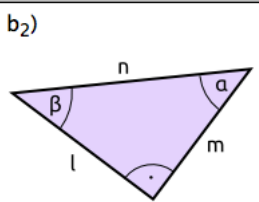
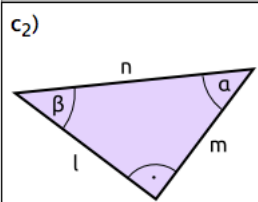
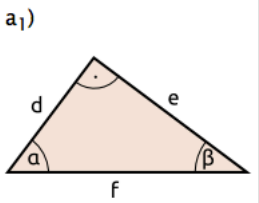
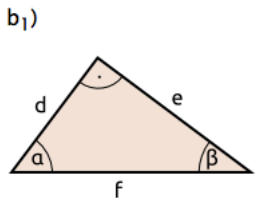
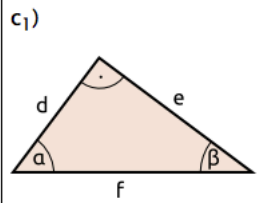
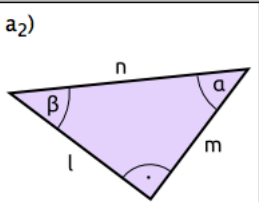
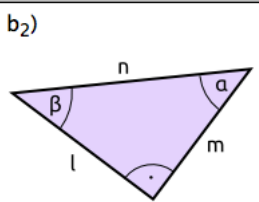
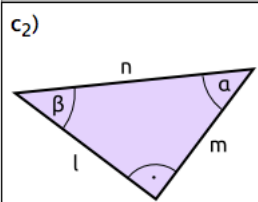
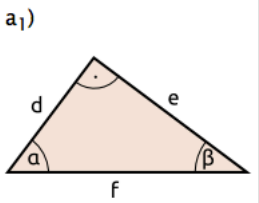
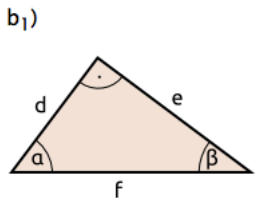
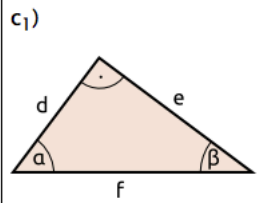
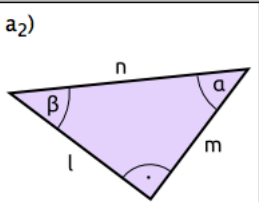
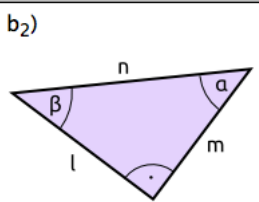
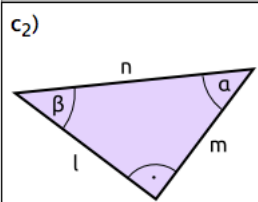
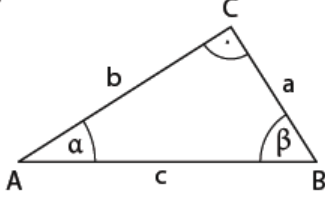
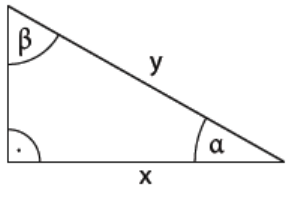
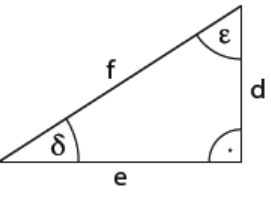
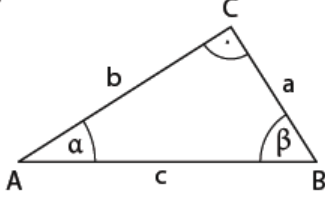
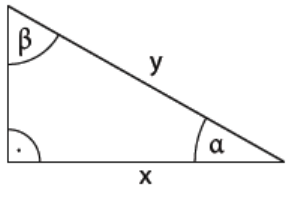
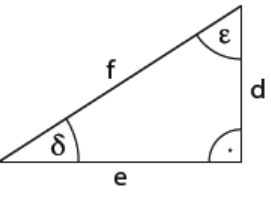
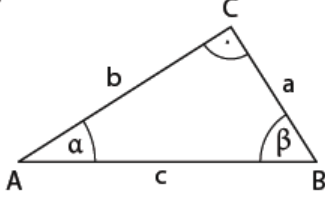
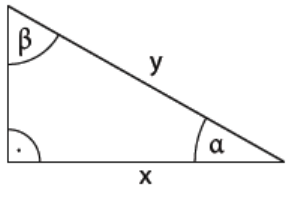
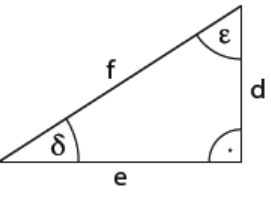
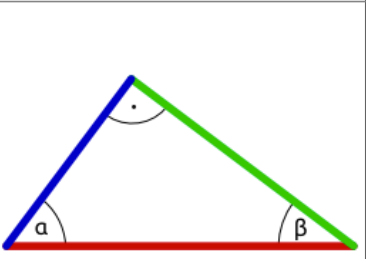


<p>1</p>	<p><math>\gamma = 90^\circ</math>  <math>a = 12,7 \text{ cm}</math>  <math>c = 24,9 \text{ cm}</math></p>										
<p>2</p>	<p><math>\alpha = 90^\circ</math>  <math>b = 420 \text{ m}</math>  <math>a = 645 \text{ m}</math></p>										
<p>3</p>	<p><math>\beta = 90^\circ</math>  <math>c = 15,8 \text{ cm}</math>  <math>a = 30,7 \text{ cm}</math></p>										
<p>4</p>	<p>Trage die Buchstaben der Seiten so ein, dass die Sinus-, die Kosinus- und die Tangensangaben richtig sind.</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 33%;">Sinus</th> <th style="width: 33%;">Kosinus</th> <th style="width: 33%;">Tangens</th> </tr> </thead> <tbody> <tr> <td> <p>a<sub>1</sub>)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>   <math>\sin \beta = \frac{\square}{\square}</math></p> </td> <td> <p>b<sub>1</sub>)</p>  <p><math>\cos \alpha = \frac{\square}{\square}</math>   <math>\cos \beta = \frac{\square}{\square}</math></p> </td> <td> <p>c<sub>1</sub>)</p>  <p><math>\tan \alpha = \frac{\square}{\square}</math>   <math>\tan \beta = \frac{\square}{\square}</math></p> </td> </tr> <tr> <td> <p>a<sub>2</sub>)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>   <math>\sin \beta = \frac{\square}{\square}</math></p> </td> <td> <p>b<sub>2</sub>)</p>  <p><math>\cos \alpha = \frac{\square}{\square}</math>   <math>\cos \beta = \frac{\square}{\square}</math></p> </td> <td> <p>c<sub>2</sub>)</p>  <p><math>\tan \alpha = \frac{\square}{\square}</math>   <math>\tan \beta = \frac{\square}{\square}</math></p> </td> </tr> </tbody> </table>		Sinus	Kosinus	Tangens	<p>a<sub>1</sub>)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>   <math>\sin \beta = \frac{\square}{\square}</math></p>	<p>b<sub>1</sub>)</p>  <p><math>\cos \alpha = \frac{\square}{\square}</math>   <math>\cos \beta = \frac{\square}{\square}</math></p>	<p>c<sub>1</sub>)</p>  <p><math>\tan \alpha = \frac{\square}{\square}</math>   <math>\tan \beta = \frac{\square}{\square}</math></p>	<p>a<sub>2</sub>)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>   <math>\sin \beta = \frac{\square}{\square}</math></p>	<p>b<sub>2</sub>)</p>  <p><math>\cos \alpha = \frac{\square}{\square}</math>   <math>\cos \beta = \frac{\square}{\square}</math></p>	<p>c<sub>2</sub>)</p>  <p><math>\tan \alpha = \frac{\square}{\square}</math>   <math>\tan \beta = \frac{\square}{\square}</math></p>
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<p>a<sub>1</sub>)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>   <math>\sin \beta = \frac{\square}{\square}</math></p>	<p>b<sub>1</sub>)</p>  <p><math>\cos \alpha = \frac{\square}{\square}</math>   <math>\cos \beta = \frac{\square}{\square}</math></p>	<p>c<sub>1</sub>)</p>  <p><math>\tan \alpha = \frac{\square}{\square}</math>   <math>\tan \beta = \frac{\square}{\square}</math></p>									
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<p>5</p>	<p>Vervollständige die Gleichungen für das jeweilige Dreieck mit den angegebenen Größen. Beachte, dass es auch 2 Lösungsmöglichkeiten geben kann.</p> <table style="width: 100%;"> <tbody> <tr> <td style="width: 33%;"> <p>a)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>  <math>\cos \alpha = \frac{\square}{\square}</math>  <math>\sin \beta = \frac{\square}{\square}</math>  <math>\cos \beta = \frac{\square}{\square}</math></p> </td> <td style="width: 33%;"> <p>b)</p>  <p><math>\sin \beta = \frac{\square}{\square}</math>  <math>\sin \square = \frac{\square}{y}</math>  <math>\cos \square = \frac{z}{\square}</math>  <math>\cos \alpha = \frac{\square}{\square}</math></p> </td> <td style="width: 33%;"> <p>c)</p>  <p><math>\sin \square = \frac{e}{\square}</math>  <math>\cos \square = \frac{\square}{f}</math>  <math>\square = \frac{d}{f}</math></p> </td> </tr> </tbody> </table>		<p>a)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>  <math>\cos \alpha = \frac{\square}{\square}</math>  <math>\sin \beta = \frac{\square}{\square}</math>  <math>\cos \beta = \frac{\square}{\square}</math></p>	<p>b)</p>  <p><math>\sin \beta = \frac{\square}{\square}</math>  <math>\sin \square = \frac{\square}{y}</math>  <math>\cos \square = \frac{z}{\square}</math>  <math>\cos \alpha = \frac{\square}{\square}</math></p>	<p>c)</p>  <p><math>\sin \square = \frac{e}{\square}</math>  <math>\cos \square = \frac{\square}{f}</math>  <math>\square = \frac{d}{f}</math></p>						
<p>a)</p>  <p><math>\sin \alpha = \frac{\square}{\square}</math>  <math>\cos \alpha = \frac{\square}{\square}</math>  <math>\sin \beta = \frac{\square}{\square}</math>  <math>\cos \beta = \frac{\square}{\square}</math></p>	<p>b)</p>  <p><math>\sin \beta = \frac{\square}{\square}</math>  <math>\sin \square = \frac{\square}{y}</math>  <math>\cos \square = \frac{z}{\square}</math>  <math>\cos \alpha = \frac{\square}{\square}</math></p>	<p>c)</p>  <p><math>\sin \square = \frac{e}{\square}</math>  <math>\cos \square = \frac{\square}{f}</math>  <math>\square = \frac{d}{f}</math></p>									

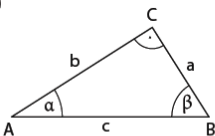
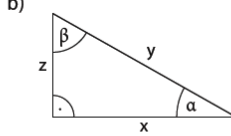
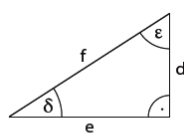
6

Ordne die Begriffe den richtigen Farben der Dreiecksseiten zu.

Ankathete von $\beta$	<input type="text" value="---"/> <input type="button" value="v"/>	a) rot
Gegenkathete von $\beta$	<input type="text" value="---"/> <input type="button" value="v"/>	b) blau
Gegenkathete von $\alpha$	<input type="text" value="---"/> <input type="button" value="v"/>	c) grün
Hypotenuse	<input type="text" value="---"/> <input type="button" value="v"/>	
Ankathete von $\alpha$	<input type="text" value="---"/> <input type="button" value="v"/>	



# LÖSUNGEN

1	<p><b><math>\alpha</math> berechnen</b></p> $\sin(\alpha) = \frac{12,7\text{cm}}{24,9\text{cm}}$ $\alpha = 30,7^\circ$ <p><b><math>\beta</math> berechnen</b></p> <p><b><math>\beta</math> berechnen</b></p> <p><b><math>b</math> berechnen</b></p> $\beta = 180^\circ - 90^\circ - 30,7^\circ$ $\beta = 59,3^\circ$ $(24,9\text{cm})^2 = (12,7\text{cm})^2 + b^2$ $b^2 = (24,9\text{cm})^2 - (12,7\text{cm})^2$ $b^2 = 458,72\text{cm}^2$ $b \approx 21,4\text{cm}$
2	<p><b><math>\beta</math> berechnen</b></p> $\sin(\beta) = \frac{420\text{m}}{645\text{m}}$ $\beta = 40,6^\circ$ <p><b><math>\gamma</math> berechnen</b></p> <p><b><math>c</math> berechnen</b></p> $\gamma = 180^\circ - 90^\circ - 40,6^\circ = 49,4^\circ$ $(645\text{m})^2 = (420\text{m})^2 + c^2$ $c^2 = (645\text{m})^2 - (420\text{m})^2$ $c^2 = 239625$ $c = 489,5\text{m} \approx 490\text{m}$
3	<p><b><math>b</math> berechnen</b></p> $b^2 = (30,7\text{cm})^2 + (15,8\text{cm})^2$ $b^2 = 1192,13\text{cm}^2$ $b = 34,5\text{cm}$ <p><b><math>\alpha</math> berechnen</b></p> $\cos(\alpha) = 15,8\text{cm} : 34,5\text{cm}$ $\alpha = 62,7^\circ$ <p><b><math>\gamma</math> berechnen</b></p> $\gamma = 180^\circ - 90^\circ - 62,7^\circ$ $\gamma = 27,3^\circ$
4	<p>a<sub>1</sub>) <math>\sin \alpha = \frac{e}{f}</math>    <math>\sin \beta = \frac{d}{f}</math>    b<sub>1</sub>) <math>\cos \alpha = \frac{d}{f}</math>    <math>\cos \beta = \frac{e}{f}</math>    c<sub>1</sub>) <math>\tan \alpha = \frac{e}{d}</math>    <math>\tan \beta = \frac{d}{e}</math></p> <p>a<sub>2</sub>) <math>\sin \alpha = \frac{l}{n}</math>    <math>\sin \beta = \frac{m}{n}</math>    b<sub>2</sub>) <math>\cos \alpha = \frac{m}{n}</math>    <math>\cos \beta = \frac{l}{n}</math>    c<sub>2</sub>) <math>\tan \alpha = \frac{l}{m}</math>    <math>\tan \beta = \frac{m}{l}</math></p>
5	<p>a) </p> <p><math>\sin \alpha = \frac{b}{c}</math>  <math>\cos \alpha = \frac{a}{c}</math>  <math>\sin \beta = \frac{a}{c}</math>  <math>\cos \beta = \frac{b}{c}</math></p> <p>b) </p> <p><math>\sin \beta = \frac{z}{y}</math>  <math>\sin \alpha = \frac{x}{y}</math>  <math>\cos \beta = \frac{x}{y}</math>  <math>\cos \alpha = \frac{z}{y}</math></p> <p>c) </p> <p><math>\sin \epsilon = \frac{d}{f}</math>  <math>\cos \epsilon = \frac{e}{f}</math>  <math>\sin \delta = \frac{e}{f}</math>  <math>\cos \delta = \frac{d}{f}</math></p> <p>a) <math>\sin \alpha = \frac{a}{c}</math>    <math>\cos \alpha = \frac{b}{c}</math>    <math>\sin \beta = \frac{b}{c}</math>    <math>\cos \beta = \frac{a}{c}</math></p> <p>b) <math>\sin \beta = \frac{x}{y}</math>    <math>\sin \alpha = \frac{z}{y}</math>    <math>\cos \beta = \frac{z}{y}</math>    <math>\cos \alpha = \frac{x}{y}</math></p> <p>c) <math>\sin \epsilon = \frac{e}{f}</math>    <math>\cos \epsilon = \frac{d}{f}</math>    <math>\sin \delta = \frac{d}{f}</math>    <math>\cos \delta = \frac{e}{f}</math></p>
6	<p>Ankathete von <math>\beta</math> grün          Gegenkathete von <math>\beta</math> blau          Gegenkathete von <math>\alpha</math> grün          Hypotenuse rot          Ankathete von <math>\alpha</math> blau</p>