

Erwartungshorizont zur 4. Klassenarbeit in der Klasse 5 im Fach Mathematik

| Lösung | Kommentar | Punkte | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|----------------|----------------|----------------|---|---|---|---|---|---|---|---|----------------|----------------|----------------|---|----------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------|---|----------------|----------------|---|---|--|---|---|---|---|---|---|--|--|
| <p>1) Grün unterstrichen (Primzahlen): 2, 29, 47, 61 Blau unterstrichen (Quadratzahlen): 1, 9, 49, 100, 144, 289, 441, 529 Nicht unterstrichen: 21, 91, 93, 141</p> | <ul style="list-style-type: none"> • Quadratzahlen sollten bis 25^2 auswendig gelernt werden. • Teilbarkeitsregeln für die Zahlen 2, 3, 5, 10 helfen bei der Lösung | <p>Je 0.5</p> <p>Je 0.5</p> <p>Je 0.5</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>2) a) $87 - 3 \cdot 17 - 2 = 87 - 51 - 2 = 36 - 2 = 34$</p> <p>b) $101 - 55 - 24 : 4 \cdot 5 = 46 - 6 \cdot 5 = 46 - 30 = 16$</p> <p>c) $8 \cdot 19 \cdot 125 = 19 \cdot 8 \cdot 125 = 19 \cdot 1000 = 19000$</p> <p>d) $22^2 \cdot 10 - 2 = 484 \cdot 10 - 2 = 4840 - 2 = 4838$</p> <p>e) $2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 32$</p> | <ul style="list-style-type: none"> • Punktrechnung vor Strichrechnung, von links nach rechts rechnen; Falsch wäre: $87 - 3 \cdot 17 - 2 = 87 - 51 = 36 - 2 = 34$ • Rechenvorteile nutzen • Potenzrechnung vor Punktrechnung vor Strichrechnung | <p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>3) Überschlag:</p> <p>a) $550\ 000 + 130\ 000 + 490\ 000 = 1\ 170\ 000$</p> <p>b) $3\ 800\ 000 - 1\ 200\ 000 - 450\ 000 = 2\ 150\ 000$</p> <p>c) $700\ 000 + 400\ 000 - 230\ 000 = 870\ 000$</p> <p>zu a)</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr><td style="text-align: right;">5</td><td>4</td><td>6</td><td>5</td><td>4</td><td>7</td></tr> <tr><td>+</td><td>1</td><td>2</td><td>9</td><td>8</td><td>2</td></tr> <tr><td>+</td><td>4₁</td><td>8₂</td><td>9₁</td><td>0</td><td>0₁</td></tr> <tr style="border-top: 1px solid black; border-bottom: 3px double black;"><td></td><td>1</td><td>1</td><td>6</td><td>5</td><td>3</td></tr> </table> <p>zu b)</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr><td style="text-align: right;">3</td><td>7</td><td>6</td><td>8</td><td>7</td><td>8</td><td>6</td></tr> <tr><td>-</td><td>1</td><td>2</td><td>3</td><td>1</td><td>4</td><td>5</td></tr> <tr><td>-</td><td>4₁</td><td>5</td><td>2₁</td><td>7₁</td><td>7</td><td>1</td></tr> <tr style="border-top: 1px solid black; border-bottom: 3px double black;"><td></td><td>2</td><td>0</td><td>8</td><td>4</td><td>5</td><td>6</td></tr> </table> | 5 | 4 | 6 | 5 | 4 | 7 | + | 1 | 2 | 9 | 8 | 2 | + | 4 ₁ | 8 ₂ | 9 ₁ | 0 | 0 ₁ | | 1 | 1 | 6 | 5 | 3 | 3 | 7 | 6 | 8 | 7 | 8 | 6 | - | 1 | 2 | 3 | 1 | 4 | 5 | - | 4 ₁ | 5 | 2 ₁ | 7 ₁ | 7 | 1 | | 2 | 0 | 8 | 4 | 5 | 6 | <ul style="list-style-type: none"> - Überschlag hilft den SuS, Fehler selbst zu entdecken - c) muss nicht berechnet werden | <p>1</p> <p>1</p> <p>1</p> <p>3</p> <p>3</p> |
| 5 | 4 | 6 | 5 | 4 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + | 1 | 2 | 9 | 8 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + | 4 ₁ | 8 ₂ | 9 ₁ | 0 | 0 ₁ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | 1 | 6 | 5 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 7 | 6 | 8 | 7 | 8 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | 1 | 2 | 3 | 1 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | 4 ₁ | 5 | 2 ₁ | 7 ₁ | 7 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | 0 | 8 | 4 | 5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|--|--|-------------------------------------|
| <p>4)</p> <p>a)</p> $\begin{array}{r} 23458 \cdot 69 \\ \underline{140748} \\ 211122 \\ \underline{1618602} \end{array}$ <p>b)</p> $987648 : 8 = \underline{123456}$ $\begin{array}{r} 8 \\ \underline{18} \\ 16 \\ \underline{27} \\ 24 \\ \underline{36} \\ 32 \\ \underline{44} \\ 40 \\ \underline{48} \\ 48 \\ \underline{0} \end{array}$ <p>c)</p> $120378 : 3 = \underline{40126} \quad \text{Rest } 1$ $\begin{array}{r} 12 \\ \underline{003} \\ 3 \\ \underline{07} \\ 6 \\ \underline{19} \\ 18 \\ \underline{1} \end{array}$ | <ul style="list-style-type: none"> - Die mittleren beiden Zeilen können auch vertauscht sein. - Gute Beherrschung des kleinen 1x1 wird aus der Grundschule vorausgesetzt - Rechnen mit Rest | <p>3</p> <p>3</p> <p>3</p> <p>9</p> |
| <p>5)</p> $1260 : 3 = \underline{420}$ $\begin{array}{r} 12 \\ \underline{060} \end{array}$ $420 : 15 = \underline{28}$ $\begin{array}{r} 30 \\ \underline{120} \\ 120 \\ \underline{0} \end{array}$ <p>Man benötigt 28 Kisten.</p> | | <p>2</p> <p>2</p> <p>1</p> <p>5</p> |

| | | |
|---|--|------------|
| 6) a) 8 5 · 5 = <u>4 2 5</u> Er ist 425 km gefahren. | | 1 1 |
| b) 3 4 5 2 + 4 2 5 <u>3 8 7 7</u> Der Zähler steht auf 3877 km. | | 2 1 |
| | | 5 |
| Gesamtpunktzahl | | 46 |

Bewertungsschlüssel:

| Note | + | 1 | - | + | 2 | - | + | 3 | - | + | 4 | - | + | 5 | - | 6 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Prozent | 0.95 | 0.90 | 0.85 | 0.80 | 0.75 | 0.70 | 0.65 | 0.60 | 0.55 | 0.50 | 0.45 | 0.40 | 0.33 | 0.27 | 0.20 | 0.00 |
| Punkte | 44 | 41 | 39 | 37 | 35 | 32 | 30 | 28 | 25 | 23 | 21 | 18 | 15 | 12 | 9 | 0 |
| Spanne | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 9 |