

ANSWERS

Page 1

Problem 1: ? = 75

Explanation: Divide both sides on 1st balance in half, so $\diamond = 500$. Substitute 500 for \diamond on 2nd balance so $\blacksquare + \blacksquare + 500 = 750$. Remove 500 from both sides so $\blacksquare + \blacksquare = 250$. Divide both sides in half so $\blacksquare = 125$. Substitute 125 for \blacksquare on 3rd balance so $\circ + \circ + 125 = 275$. Remove 125 from both sides so $\circ + \circ = 150$. Divide in half so $\circ = 75$.

Problem 2: ? = 225

Explanation: Substitute $\bullet \square$ from 2nd balance for \diamond on 1st balance so $1,000 = \bullet \square + \bullet \square$. Divide both sides in half so $500 = \bullet \square$. Substitute 500 for $\bullet \square$ on 3rd balance so $500 + \star + \star = 650$. Remove 500 from both sides so $\star + \star = 150$. Divide both sides in half so $\star = 75$. $\star + \star + \star = 75 \cdot 3 = 225$.

Page 2

Problem 1: $b = 200$
 $c = 900$
 $d = 9,900$
 $b + d = 10,100$

Problem 2: $a = 345$
 $c = 296$
 $d = 358$
 $a + d = 703$

Problem 3: $a = 2,563$
 $b = 3,724$
 $d = 5,097$
 $a + c = 6,851$

Problem 4: $a = 10,845$
 $b = 12,654$
 $c = 11,369$
 $b + c = 24,023$

Problem 5: $a = 1\frac{3}{4}$
 $c = \frac{1}{2}$
 $d = 1\frac{1}{3}$
 $a + d = 3\frac{1}{12}$

Problem 6: $b = \frac{1}{2}$
 $c = \frac{1}{3}$
 $d = \frac{2}{3}$
 $a + d = \frac{11}{12}$

Page 3

Problem 1: ? = 1,150

Explanation: Divide both sides on 2nd balance in thirds so $\circ = 700$. Substitute 700 for \circ on 3rd balance so $\blacksquare + \blacksquare + 700 = 1,000$. Remove 700 from both sides so $\blacksquare + \blacksquare = 300$. Divide both sides in half so $\blacksquare = 150$. Substitute 150 for \blacksquare and 700 for \circ on 1st balance so $150 + 700 + \diamond = 2,000$. Remove 850 from both sides so $\diamond = 1,150$.

Problem 2: ? = 2,250

Explanation: Divide both sides on 3rd balance in fourths so $\circ = 250$. Substitute 250 for \circ on 1st balance so $850 = \star + \star + 250$. Remove 250 from both sides so $600 = \star + \star$. Divide both sides in half so $300 = \star$. Substitute 300 for each \star on 2nd balance so $300 + 300 + 300 = 900 = \square$. Divide both sides in half so $450 = \triangle$. $\square \square \triangle = 450 \cdot 5 = 2,250$.

Page 4

Problem 1: ? = $\frac{1}{3}$

Explanation: Divide both sides on 1st balance in half so $\cup = 1\frac{1}{2}$. Substitute $1\frac{1}{2}$ for each \cup on 2nd balance so $1\frac{1}{2} + 1\frac{1}{2} + 1\frac{1}{2} = 4\frac{1}{2} = \blacksquare$. Substitute $4\frac{1}{2}$ for each \blacksquare on 3rd balance so $\diamond + \diamond + \diamond + 4\frac{1}{2} + 4\frac{1}{2} = 10$. Remove 9 from both sides so $\diamond + \diamond + \diamond = 1$. Divide both sides in thirds so $\diamond = \frac{1}{3}$.

Problem 2: ? = $6\frac{3}{4}$

Explanation: Divide both sides on 2nd balance in half so $\square = 3\frac{1}{2}$. Substitute $3\frac{1}{2}$ for each \square on 1st balance so $3\frac{1}{2} + 3\frac{1}{2} + 3\frac{1}{2} = 10\frac{1}{2} = \star$. Substitute $10\frac{1}{2}$ for each \star on 3rd balance so $\circ + \circ + 10\frac{1}{2} + 10\frac{1}{2} = 30$. Remove 21 from both sides so $\circ + \circ = 9$. Divide in fourths so $\cup = 2\frac{1}{4}$. $\circ \cup = 2\frac{1}{4} \cdot 3 = 6\frac{3}{4}$.

Page 5

Problem 1: ? = 1,275

Explanation: Divide both sides on 1st balance in half so $\blacksquare \star = 150$. Substitute 150 for $\blacksquare \star$ on 2nd balance so $150 + \bullet = 1,050$. Remove 150 from both sides so $\bullet = 900$. Substitute 900 for \bullet on 3rd balance so $900 + \diamond + \diamond = 1,750$. Remove 900 from both sides so $\diamond + \diamond = 850$. Divide both sides in half so $\diamond = 425$. $\diamond \diamond \diamond = 425 \cdot 3 = 1,275$.

Problem 2: ? = 3

Explanation: Divide both sides on 1st balance in fourths so $\triangle = 3\frac{1}{4}$. Substitute $3\frac{1}{4}$ for each \triangle on 2nd balance so $3\frac{1}{4} + 3\frac{1}{4} + 3\frac{1}{4} = 9\frac{3}{4} = \circ$. Substitute $9\frac{3}{4}$ for \circ on 3rd balance so $9\frac{3}{4} + \blacklozenge = 10\frac{1}{2}$. Remove $9\frac{3}{4}$ from both sides so $\blacklozenge = \frac{3}{4}$. $\blacklozenge \blacklozenge \blacklozenge \blacklozenge = \frac{3}{4} \cdot 4 = 3$.