

Aim: Age Problems

Warm Up:

Mary is four years older than Sue. Sue is n years old. If the sum of their ages is 16, how old is Mary and Sue?

Refer to Word Problem Packet (Future & Past Age Problems)

51) Laura is 4 times as old as her daughter. In 16 years she will be only twice as old. What are their present ages?

There are TWO legends.

Present

Daughter - x

Laura - $4x$

Future:

Daughter - $x + 16$

Laura - $4x + 16$

Hint:

Use the Future to
write the equation.

$$E: 4x + 16 = 2(x + 16)$$

$$4x + 16 = 2x + 32$$

$$2x = 16$$

$$x = 8$$

A: The daughter is 8 and Laura is 32.

$$C: 32 + 16 = 2(8 + 16)$$

$$48 = 2(24)$$

$$48 = 48$$

Age Word Problems

52) The sum of a father and son's ages is 45 years. Five years ago, the father was six times as old as his son. Find their present ages.

Present:

Son: x

Father: $45-x$

Past:

Son: $x - 5$

Father: $(45-x) - 5$

$$E: (45-x) - 5 = 6(x - 5)$$

$$40 - x = 6x - 30$$

$$70 = 7x$$

$$x = 10$$

A: The son is 10 and the father is 35.

$$C: 35 - 5 = 6(10 - 5)$$

$$30 = 6(5)$$

$$30 = 30$$

54) Eric is ten years younger than Jason. In six years, Jason will be twice as old as Eric. What are their present ages?

Present:

Jason = x

Eric = $x - 10$

Future:

Jason = $x + 6$

Eric = $x - 10 + 6 = x - 4$

$$E: x + 6 = 2(x - 4)$$

$$x + 6 = 2x - 8$$

$$x = 14$$

A: Jason is 14 years old and Eric is 4 years old.

$$C: 14 + 6 = 2(4 + 6)$$

$$20 = 20$$

Age Word Problems

56) Emily is 4 years older than Allison. Eight years ago, she was twice as old. Find their ages now.

Present:

$$\text{Allison} = x$$

$$\text{Emily} = x + 4$$

Past:

$$\text{Allison} = x - 8$$

$$\text{Emily} = x + 4 - 8 = x - 4$$

$$E: x - 4 = 2(x - 8)$$

$$x - 4 = 2x - 16$$

$$x = 12$$

A: Allison is 12 years old and Emily is 16 years old.

$$C: 16 - 8 = 2(12 - 8)$$

$$8 = 8 \checkmark$$

Answers to HW: Word Problem Packet 53-61 (odds)

53. Matt is 40 years old and Richard is 8 years old.

55. Jack is 9 years old and Sam is 36 years old.

57. Josh is 14 years old.

59. Andy is 18 years old and Daniel is 6 years old.

61. Mom is 27 years old and Joyce is 3 years old.

Age Word Problems

Age Problem HW answers explained

53. Present

$$\text{Let Matt} = x$$

$$\text{Richard} = 48 - x$$

Future

$$\text{Matt} = x + 8$$

$$\text{Richard} = 48 - x + 8 = 56 - x$$

$$E: x + 8 = 3(56 - x)$$

$$x + 8 = 168 - 3x$$

$$4x = 160$$

$$x = 40$$

$$C: 40 + 8 = 3(8 + 8)$$

$$48 = 48 \checkmark$$

A: Matt is 40 and Richard is 8 years old.

55. Present

$$\text{Jack} = x$$

$$\text{Sam} = 4x$$

Past

$$\text{Jack} = x - 6$$

$$\text{Sam} = 4x - 6$$

$$E: 4x - 6 = 10(x - 6)$$

$$4x - 6 = 10x - 60$$

$$54 = 6x$$

$$x = 9$$

$$C: 36 - 6 = 10(9 - 6)$$

$$30 = 30 \checkmark$$

A: Jack is 9 and Sam is 36.

Age Word Problems

57. Present

$$\text{Josh} = x$$

Past

$$\text{Josh} = x - 4$$

Future

$$\text{Josh} = x + 1$$

$$E: x - 4 = \frac{2}{3}(x + 1)$$

$$3(x - 4) = 2(x + 1)$$

$$3x - 12 = 2x + 2$$

$$x = 14$$

$$C: 14 - 4 = \frac{2}{3}(14 + 1)$$

$$10 = 10 \quad \checkmark$$

A: Josh is 14 years old

59. Present

$$\text{Andy} = x$$

$$\text{Daniel} = x - 12$$

Past

$$\text{Andy} = x - 3$$

$$\text{Daniel} = x - 12 - 3 = x - 15$$

$$E: x - 3 = 5(x - 15)$$

$$x - 3 = 5x - 75$$

$$72 = 4x$$

$$x = 18$$

$$C: 18 - 3 = 5(6 - 3)$$

$$15 = 15 \quad \checkmark$$

A: Andy is 18 and Daniel is 6.

Age Word Problems

61. Present

$$\text{Joyce} = x$$

$$\text{Mother} = 9x$$

Future

$$\text{Joyce} = x + 3$$

$$\text{Mother} = 9x + 3$$

$$E: x + 3 = 1/5(9x + 3)$$

$$5(x+3) = 9x + 3$$

$$5x + 15 = 9x + 3$$

$$12 = 4x$$

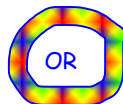
$$x = 3$$

$$C: 3 + 3 = 1/5(27 + 3)$$

$$6 = 1/5(30)$$

$$6 = 6 \checkmark$$

A: Joyce is 3 and mom is 27.



Present

$$\text{Mother} = x$$

$$\text{Joyce} = 1/9 x$$

Future

$$\text{Mom} = x + 3$$

$$\text{Joyce} = 1/9 x + 3$$

$$E: 1/9 x + 3 = 1/5(x + 3)$$

$$45(1/9 x + 3) = 45[1/5(x + 3)]$$

$$5x + 135 = 9(x + 3)$$

$$5x + 135 = 9x + 27$$

$$108 = 4x$$

$$x = 27$$

$$C: 3 + 3 = 1/5(27 + 3)$$

$$6 = 1/5(30)$$

$$6 = 6 \checkmark$$

A: Mom is 27 and Joyce is 3.

Answers to Age Problems: 54-60 evens

54. Jason is 14 years old and Eric is 4 years old.

56. Allison is 12 years old and Emily is 16 years old.

58. Rebecca is 10 years old and Nick is 30 years old.

60. Stanley is 8 years old and Phil is 32 years old.

Age Word Problems

54) Eric is ten years younger than Jason. In six years, Jason will be twice as old as Eric. What are their present ages?

Present:

$$\text{Jason} = x$$

$$\text{Eric} = x - 10$$

Future:

$$\text{Jason} = x + 6$$

$$\text{Eric} = x - 10 + 6 = x - 4$$

$$E: x + 6 = 2(x - 4)$$

$$x + 6 = 2x - 8$$

$$x = 14$$

A: Jason is 14 years old and Eric is 4 years old.

$$C: 14 + 6 = 2(4 + 6)$$

$$20 = 20$$

56) Emily is 4 years older than Allison. Eight years ago, she was twice as old. Find their ages now.

Present:

$$\text{Allison} = x$$

$$\text{Emily} = x + 4$$

Future:

$$\text{Allison} = x - 8$$

$$\text{Emily} = x + 4 - 8 = x - 4$$

$$E: x - 4 = 2(x - 8)$$

$$x - 4 = 2x - 16$$

$$x = 12$$

A: Allison is 12 years old and Emily is 16 years old.

$$C: 16 - 8 = 2(12 - 8)$$

$$8 = 8 \checkmark$$

Age Word Problems

58. Present	Future
Rebecca = x	Rebecca = $x + 10$
Nick = $3x$	Nick = $3x + 10$

$$\begin{aligned} \text{E: } 3x + 10 &= 2(x+10) \\ 3x + 10 &= 2x + 20 \\ x &= 10 \end{aligned}$$

A: Rebecca is 10 years old and Nick is 30 years old.

$$\begin{aligned} \text{C: } 30 + 10 &= 2(10 + 10) \\ 40 &= 2(20) \\ 40 &= 40 \quad \checkmark \end{aligned}$$

60. Present	Past
Stanley = x	Stanley = $x - 4$
Phil = $x + 24$	Phil = $x + 24 - 4 = x + 20$

$$\begin{aligned} \text{E: } x + 20 &= 7(x - 4) \\ x + 20 &= 7x - 28 \\ 20 &= 6x - 28 \\ 48 &= 6x \\ x &= 8 \end{aligned}$$

A: Stanley is 8 years old and Phil is 32 years old.

$$\begin{aligned} \text{C: } 32 - 4 &= 7(8 - 4) \\ 28 &= 7(4) \\ 28 &= 28 \end{aligned}$$