More Systems of Equations – Day 4
Purchases, Printing Press, and Current Travel
Unit 5: Real World Applications

Solve each question. Round your answer to the nearest hundredth when needed.

1. Kim spent $42 on writing utensils. Pens cost $6 and pencils cost $3. If she bought a total of 8, then how many of each kind did she buy?

6 pens
2 pencils

2. Danielle spent $290 on pairs of pants. Dress pants cost $70 and jeans cost $30. If she bought a total of 7, then how many of each kind did she buy?

2 dress pants
5 jeans

3. Nadia bought 6 pairs of pants for a total of $220. Dress pants cost $50 and jeans cost $30. How many of each type of pants did she buy?

2 dress pants
4 jeans

4. William bought 5 writing utensils for a total of $8. Pens cost $1 and pencils cost $2. How many of each writing utensil did he buy?

2 pens
3 pencils

5. At Dolores' Printing Company LLC there are two kinds of printing presses: Model A which can print 80 books per day and Model B which can print 45 books per day. The company owns 16 total printing presses and this allows them to print 965 books per day. How many of each type of press do they have?

7 of Model A
9 of Model B

6. At Kristin's Printing Company LLC there are two kinds of printing presses: Model A which can print 60 books per day and Model B which can print 75 books per day. The company owns 11 total printing presses and this allows them to print 735 books per day. How many of each type of press do they have?

6 of Model A
5 of Model B

7. At Jose's Printing Company LLC there are two kinds of printing presses: Model A which can print 70 books per day and Model B which can print 60 books per day. The company owns 13 total printing presses and this allows them to print 860 books per day. How many of each type of press do they have?

8 of Model A
5 of Model B

8. At Maria's Printing Company LLC there are two kinds of printing presses: Model A which can print 50 books per day and Model B which can print 65 books per day. The company owns 12 total printing presses and this allows them to print 735 books per day. How many of each type of press do they have?

3 of Model A
9 of Model B

9. Traveling with the current a certain boat went 27 km/h. Against the same current it only went 1 km/h. Find the speed of the boat in still water and the speed of the current.

Boat 14 km/h

Current 13 km/h

10. Traveling with the current a certain boat went 18 mph. Against the same current it only went 10 mph. What is the speed of the current? How fast would the boat go if there were no current?

Boat 14 mph

Current 4 mph.

11. Flying to Kansas City with a tailwind a plane averaged 151 mph. On the return trip the plane only averaged 103 mph while flying back into the same wind. What is the speed of the wind? How fast would the plane go if there were no wind?

Plane 127 mph

Wind 24 mph

12. Flying to Wisconsin with a tailwind a plane averaged 235 mph. On the return trip the plane only averaged 177 mph while flying back into the same wind. Find the speed of the wind and the speed of the plane in still air.

Plane 206 mph

Wind 29 mph

13. A plane traveled 528 miles each way to Austin and back. The trip there was with the wind. It took 4 hours. The trip back was into the wind. The trip back took 6 hours. Find the speed of the plane in still air and the speed of the wind.

Plane 110mph

Wind 22mph

14. A plane traveled 960 miles each way to Ft. Worth and back. The trip there was with the wind. It took 10 hours. The trip back was into the wind. The trip back took 24 hours. Find the speed of the plane in still air and the speed of the wind.

Plane 68mph

Wind 28 mph

15. A plane traveled 1440 miles each way to Anchorage and back. The trip there was with the wind. It took 12 hours. The trip back was into the wind. The trip back took 15 hours. Find the speed of the plane in still air and the speed of the wind.

Plane 108 mph

Wind 12 mph

16. A plane traveled 315 miles each way to Baltimore and back. The trip there was with the wind. It took 3 hours. The trip back was into the wind. The trip back took 7 hours. What is the speed of the plane in still air? What is the speed of the wind?

Plane 75 mph

Wind 30 mph

① Total Utensils

Cost Equation

6 Pens
2 Pencils

$-3[P + L = 8] \cdot -3$

$6P + 3L = 42$

$-3P - 3L = -24$

$\frac{3P}{3} = \frac{18}{3}$

$P = 6$

Using $P + L = 8$

$6 + L = 8$

$-6 \quad -6$

$L = 2$

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② Total Pants

Cost Equation

2 pairs Dress Pants
5 pairs of Jeans

$-30[D + J = 7] \cdot -30$

$70D + 30J = 290$

$-30D - 30J = -210$

$\frac{40D}{40} = \frac{80}{40}$

$D = 2$

Using $D + J = 7$

$2 + J = 7$

$-2 \quad -2$

$J = 5$

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③ Total Pants

Cost Equation

2 pairs Dress Pants
4 pairs of Jeans

$-30[D + J = 6] \cdot -30$

$50D + 30J = 220$

$-30D - 30J = -180$

$\frac{20D}{20} = \frac{40}{20}$

$D = 2$

Using $D + J = 6$

$2 + J = 6$

$-2 \quad -2$

$J = 4$

---

④ Total Utensils

Cost Equation

2 Pens
3 Pencils

$-1[P + L = 5] \cdot -1$

$1P + 2L = 8$

$-P - L = -5$

$L = 3$

Using $P + L = 5$

$P + 3 = 5$

$-3 \quad -3$

$P = 2$

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⑤ Number of Presses

Total Books

7 of Model A
9 of Model B

$-45[A + B = 16] \cdot -45$

$80A + 45B = 965$

$-45A - 45B = -720$

$\frac{35A}{35} = \frac{245}{35}$

$A = 7$

Using $A + B = 16$

$7 + B = 16$

$-7 \quad -7$

$B = 9$

⑥ Number of Presses
Total Books

6 of Model A
5 of Model B

$-60[A + B = 11] \cdot -60$

$60A + 75B = 735$

$-60A - 60B = -660$

$\frac{15B}{15} = \frac{75}{15}$

$B = 5$

Using

$A + B = 11$

$A + 5 = 11$

$-5 \quad -5$

$A = 6$

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⑦ Number of Presses
Total Books

8 of Model A
5 of Model B

$-60[A + B = 13] \cdot -60$

$70A + 60B = 860$

$-60A - 60B = -780$

$\frac{10A}{10} = \frac{80}{10}$

$A = 8$

Using

$A + B = 13$

$8 + B = 13$

$-8 \quad -8$

$B = 5$

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⑧ Number of Presses
Total Books

$-50[A + B = 12] \cdot -50$

$50A + 65B = 735$

$-50A - 50B = -600$

$\frac{15B}{15} = \frac{135}{15}$

$B = 9$

Using

$A + B = 12$

$A + 9 = 12$

$-9 \quad -9$

$A = 3$

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⑨ With Current
Against Current

Boats Speed 14 Km/h
Current Speed 13 Km/h

$r + c = 27$

$r - c = 1$

$\frac{2r}{2} = \frac{28}{2}$

$r = 14$

Using

$r + c = 27$

$14 + c = 27$

$-14 \quad -14$

$c = 13$

---

⑩ With Current
Against Current

Boats Speed 14 mph
Current Speed 4 mph

$r + c = 18$

$r - c = 10$

$\frac{2r}{2} = \frac{28}{2}$

$r = 14$

Using

$r + c = 18$

$14 + c = 18$

$-14 \quad -14$

$c = 4$

(11) With Wind $r + w = 151$

Against Wind $r - w = 103$

$$\frac{2r}{2} = \frac{254}{2}$$

$$r = 127$$

using $r + w = 151$

$127 + w = 151$

$-127 \quad -127$

$w = 24$

Plane Speed	127 mph
Wind Speed	24 mph

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(12) With Wind $r + w = 235$

Against Wind $r - w = 177$

$$\frac{2r}{2} = \frac{412}{2}$$

$$r = 206$$

using $r + w = 235$

$206 + w = 235$

$-206 \quad -206$

$w = 29$

Plane Speed	206 mph
Wind Speed	29 mph

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(13)

	R	· T	= D
With Wind	$r + w$	4	528
Against Wind	$r - w$	6	528

$$\frac{(r+w)(4)}{4} = \frac{528}{4}$$

$$r + w = 132$$

$$\frac{(r-w)(6)}{6} = \frac{528}{6}$$

$$r - w = 88$$

$r + w = 132$

$r - w = 88$

$$\frac{2r}{2} = \frac{220}{2}$$

$$r = 110$$

using $r + w = 132$

$110 + w = 132$

$-110 \quad -110$

$w = 22$

Plane Speed 110 mph

Wind Speed 22 mph

(14)

	R	· T	= D
With Wind	$r+w$	10	960
Against Wind	$r-w$	24	960

$\frac{(r+w)(10)}{10} = \frac{960}{10}$

$r+w = 96$

$\frac{(r-w)(24)}{24} = \frac{960}{24}$

$r-w = 40$

$r+w = 96$
$r-w = 40$
$\frac{2r}{2} = \frac{136}{2}$

$r = 68$

using $r+w = 96$
$68+w = 96$
$-68 \quad -68$
$w = 28$

Plane Speed 68 mph
Wind Speed 28 mph

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(15)

	R	· T	= D
With Wind	$r+w$	12	1440
Against Wind	$r-w$	15	1440

$\frac{(r+w)(12)}{12} = \frac{1440}{12}$

$r+w = 120$

$\frac{(r-w)(15)}{15} = \frac{1440}{15}$

$r-w = 96$

$r+w = 120$
$r-w = 96$
$\frac{2r}{2} = \frac{216}{2}$

$r = 108$

using $r+w = 120$
$108+w = 120$
$-108 \quad -108$
$w = 12$

Plane Speed 108 mph
Wind Speed 12 mph

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(16)

	R	· T	= D
With Wind	$r+w$	3	315
Against Wind	$r-w$	7	315

$\frac{(r+w)(3)}{3} = \frac{315}{3}$

$r+w = 105$

$\frac{(r-w)(7)}{7} = \frac{315}{7}$

$r-w = 45$

$r+w = 105$
$r-w = 45$
$\frac{2r}{2} = \frac{150}{2}$

$r = 75$

using $r+w = 105$
$75+w = 105$
$-75 \quad -75$
$w = 30$

Plane Speed 75 mph
Wind Speed 30 mph