Grade 8
Grid-In Sample Problems

1.

$$1 \text{ dollar} = 0.5 \text{ sind}$$
$$1 \text{ dollar} = 26 \text{ ricks}$$

Tariq has 120 ricks. He wants to convert the ricks to sinds, according to the rates above. Rounding to the nearest hundredth, how many sinds will he receive for his 120 ricks? (Assume there are no exchange fees.)

2. Solve for x:

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

3. Selena earns 4% commission on every laptop she sells. The laptops at her store sell for $800 each. If she earned $384 in commission this week, how many laptops did she sell?

4. If x is a positive integer and y is a negative integer, what is the **greatest** possible value of xy?

5. Rafiq earns 12% commission on every car he sells. Last week, Rafiq earned $10,800 in commissions. If the cars he sold had an average price of $18,000, how many cars did he sell?

6. Solve for x:

$$\frac{5 - 2x}{3} = 9$$

7. A map uses a scale of 2 centimeters:15 miles. Two towns are 360 miles apart. How far apart, in centimeters, are these towns on the map?

8. Solve for x:

$$\frac{3x + 4}{2} = 14$$

10. What is the **greatest** integer less than $-\frac{23}{7}$?

9. Mr. Gomez bought x packages of pencils for his classroom. Each package of pencils cost $2.50 before tax. He paid a total of $81.00, which included 8% sales tax. How many packages of pencils did he buy?

1. **(2.31)** First, use the given conversions to calculate how many sinds are in 1 rick:

1 dollar = 0.5 sind
1 dollar = 26 ricks

Since both quantities are equal to 1 dollar, set the sinds and ricks equal to each other:

26 ricks = 0.5 sind

Multiply both sides by 2:

52 ricks = 1 sind

Tariq has 120 ricks, so:

$\frac{120}{52}$ ricks $\cong$ 2.31 sinds

Since the answer is a positive decimal, skip the first column. The response begins on the second column on the left-hand side.

2. ($^-$**6**)

$2(x - 4) - (4x + 1) = 3$	Apply the distributive property; distribute the 2 through the first set of parentheses and distribute the negative sign through the second set of parentheses.
$2x - 8 - 4x - 1 = 3$	Combine like terms.
$^-2x - 9 = 3$	Apply the additive inverse property; add 9 on both sides of the equal sign.
$^-2x = 12$	Apply the multiplicative inverse property; divide by $^-2$ on both sides of the equal sign.
$x = {}^-6$	

Since the answer is a negative single digit, fill in the negative sign and enter the digit 6 in the second column.

3. **(12)** Let x be the number of laptops Selena sold this week. Her commission on 1 laptop, in dollars, would be 800(0.04). Her total commission for the week is 800(0.04)x. Set up an equation to solve:

$(800)(0.04)x = 384$
$32x = 384$
$x = 12$

Since the answer is a positive whole number, skip the first column and begin inputting your answer in the second column.

4. ($^-$**1**) Since x is a positive integer, $x = 1, 2, 3,$ etc. Since y is a negative integer, $y = ^-1, ^-2, ^-3,$ etc. Because one factor is negative and one is positive, the value of xy must be negative. In order to find the greatest possible value of xy, we will need to find the smallest positive integer of x, which is 1, and the greatest negative integer of y, which is $^-1$. Therefore, the value of xy is $^-1$.

Since the answer is a negative single digit, fill in the negative sign and enter the digit 1 in the second column.

5. **(5)** Let x be the number of cars Rafiq sold last week. His commission, in dollars, on 1 car would be $18,000(0.12) = 2,160$. His total commission is $2,160x$. Set up an equation to solve:

$$2,160x = 10,800$$
$$x = 5$$

Since the answer is a positive whole number, skip the first column and begin inputting your answer in the second column.

6. $(^{-}11)$

$\dfrac{5 - 2x}{3} = 9$	Multiply both sides by 3 to eliminate the fraction.
$5 - 2x = 27$	Apply the additive inverse property; subtract 5 from both sides of the equation.
$^{-}2x = 22$	Apply the multiplicative inverse property; divide both sides of the equation by $^{-}2$.
$x = {}^{-}11$	

Since the answer is a negative integer, fill in the negative sign and enter the two digits in the second and third columns.
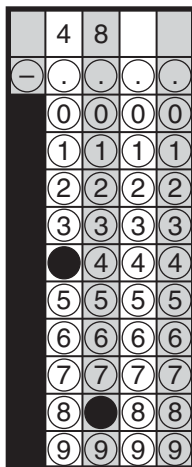
7. **(48)** Set up a proportion to solve:

$$\frac{x \text{ cm}}{360 \text{ mi}} = \frac{2 \text{ cm}}{15 \text{ mi}}$$

$$x = \frac{2(360)}{15} = 48$$

Since the answer is a positive whole number, skip the first column and begin inputting your answer in the second column.

	4	8		
−	.	.	.	.
	0	0	0	0
	1	1	1	1
	2	2	2	2
	3	3	3	3
●	4	4	4	
	5	5	5	5
	6	6	6	6
	7	7	7	7
8	●	8	8	
	9	9	9	9

8. **(8)**

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$\dfrac{3x + 4}{2} = 14$	Apply the multiplicative inverse property; multiply both sides by 2 to eliminate the fraction.
$3x + 4 = 28$	Apply the additive inverse property; subtract 4 from both sides of the equation.
$3x = 24$	Apply the multiplicative inverse property; divide both sides of the equation by 3.
$x = 8$	

Since the answer is a positive whole number, skip the first column and begin inputting your answer in the second column.

	8			
−	.	.	.	.
	0	0	0	0
	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
	5	5	5	5
	6	6	6	6
	7	7	7	7
●	8	8	8	
	9	9	9	9
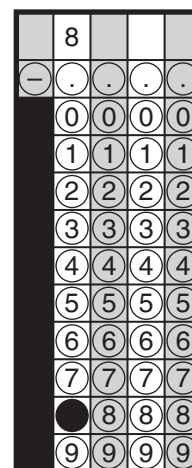
9. **(30)** The total amount Mr. Gomez spent, in dollars, before tax is 2.50*x*. The tax is (2.50*x*)(0.08). Set up an equation to solve:

2.50*x* + 2.50*x*(0.08) = 81.00
2.50*x* + 0.2*x* = 81.00
2.70*x* = 81.00
x = 30

Mr. Gomez bought 30 packages of pencils.

Since the answer is a positive whole number, skip the first column and begin inputting your answer in the second column.

10. ($^-$**4**) First, convert the improper fraction to a mixed number:

$$-\frac{23}{7} = -3\frac{2}{7}$$

The two closest integers to this fraction are $^-$4 and $^-$3. The integer less than $-\frac{23}{7}$ is $^-$4.

Since the answer is a negative single digit, fill in the negative sign and enter the digit 4 in the second column.

Blank Math Grid-Ins to Be Used with Sample Items.