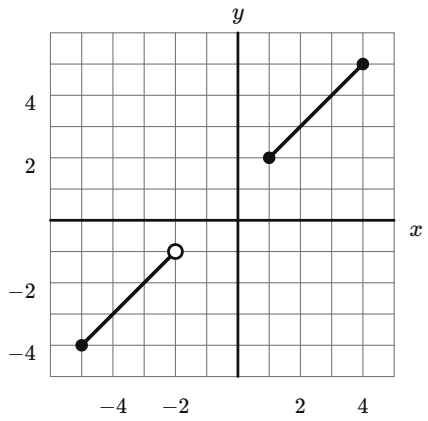
Algebra 2 Unit 1 quiz 5: Linear functions in context, Domain and range from a graph

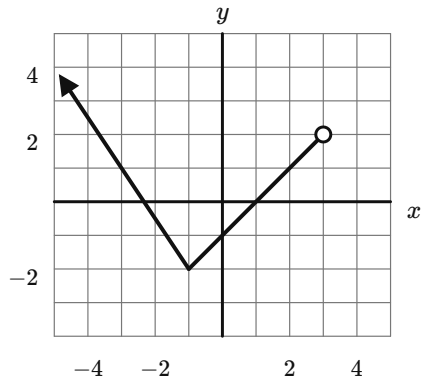
Name _____ Date _____ Period _____

8 questions, 21 points

1. Write the domain and range of the graph in the figure in interval notation. One piece runs from the closed dot (−5, −4) to the open dot (−2, −1); the other runs from the closed dot (1, 2) to the closed dot (4, 5). (2 points)

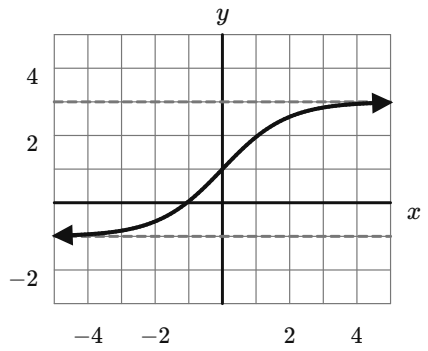


2. The graph in the figure is made of two straight pieces that meet at (−1, −2). The left piece falls from the upper left, 3 down for every 2 across, and its arrow says it carries on forever. The right piece rises, 1 up for every 1 across, to the open dot (3, 2). Find the domain and range in interval notation. Explain what the open dot does to each. (2 points)



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3. The curve in the figure rises from left to right, with arrows at both ends. Going left it flattens out toward the dashed line $y = -1$, and going right toward the dashed line $y = 3$, never reaching either. Find the domain and range, as inequalities and in interval notation. (2 points)



4. After the last snowfall of the winter, the snow at a ski resort is $S(d) = 145 - 2.5d$ centimeters deep, d days later. (3 points)

(a) Say what 145 and −2.5 mean, with their units.

(b) What does the equation $S(d) = 100$ ask? Solve it.

(c) When will the snow be gone, if the model holds?

5. A hall prices a party by the number of guests. A party for 17 guests costs 497 dollars, and each guest more or fewer adds or takes off 21 dollars. (3 points)

(a) Write the cost $C(n)$, in dollars, of a party for n guests, and say what its starting value means.

(b) How many guests can come to a party that costs 1316 dollars?

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6. Two printers in a print shop run at steady speeds. By t minutes after noon, printer A has printed $A(t) = 600 + 40t$ pages and printer B has printed $B(t) = 150 + 55t$ pages. (3 points)

(a) Which printer is ahead at noon, and by how many pages? Which prints faster, and by how much?

(b) When have they printed the same number of pages, and how many is that?

(c) Without finding $A(45)$ or $B(45)$, say which printer has printed more at 45 minutes after noon, and by how many pages.

7. A power company bills a home $E(k) = 0.15k + 12$ dollars for a month in which it uses k kilowatt-hours (kWh) of electricity. Next year the company will make one of two changes.

Plan A: the fixed monthly charge rises to 18 dollars, and the price per kWh stays the same.

Plan B: the price per kWh rises to 0.18 dollars, and the fixed charge stays the same. (3 points)

(a) Write the monthly bill under each plan, $A(k)$ and $B(k)$.

(b) For which monthly uses does plan A give the higher bill? Explain using how much each change adds to the bill.

8. A courier charges 6 dollars to send a parcel weighing up to 2 kilograms, 9 dollars for more than 2 kg and up to 5 kg, and 15 dollars for more than 5 kg and up to 10 kg. It does not take parcels over 10 kg. Samir graphs the charge C in dollars for a parcel of w kilograms as three horizontal segments: from the open dot (0, 6) to the closed dot (2, 6), from the open dot (2, 9) to the closed dot (5, 9), and from the open dot (5, 15) to the closed dot (10, 15). (3 points)

(a) Find the domain and range.

(b) Say what each means for the courier, and explain why the range is not an interval.

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