WORKSHEET

Chapter 12: Step graphs

1 Graph the following stepwise linear functions:

a $y = \begin{cases} 8 \text{ for } 0 < x \leq 5 \\ 12 \text{ for } 5 < x \leq 10 \\ 16 \text{ for } 10 < x \leq 15 \end{cases}$

b $C = \begin{cases} \$7 \text{ for } 0 \leq x < 5 \\ \$10 \text{ for } 5 \leq x < 10 \\ \$12 \text{ for } 10 \leq x < 15 \end{cases}$

c $y = \begin{cases} 3.5 \text{ for } 0 \leq x < 20 \\ 5.5 \text{ for } 20 \leq x < 40 \\ 7.5 \text{ for } 40 \leq x < 60 \end{cases}$

d $y = \begin{cases} 30 \text{ for } 0 < x \leq 5 \\ 15 \text{ for } 5 < x \leq 10 \\ 7.5 \text{ for } 10 < x \leq 50 \end{cases}$

e $y = \begin{cases} 15 \text{ for } 0 < x \leq 10 \\ 20 \text{ for } 10 < x \leq 20 \\ 25 \text{ for } 20 < x \leq 30 \\ 30 \text{ for } 30 < x \leq 40 \end{cases}$

f $C = \begin{cases} \$500 \text{ for } 0 \leq x < 10 \\ \$750 \text{ for } 10 \leq x < 20 \\ \$1000 \text{ for } 20 \leq x < 30 \\ \$1250 \text{ for } 30 \leq x < 40 \end{cases}$

g $y = \begin{cases} 0.2 \text{ for } 1 \leq x < 3 \\ 0.4 \text{ for } 3 \leq x < 5 \\ 0.8 \text{ for } 5 \leq x < 7 \\ 1.2 \text{ for } 7 \leq x < 9 \end{cases}$

h $y = \begin{cases} 50 \text{ for } 0 < x \leq 8 \\ 75 \text{ for } 8 < x \leq 11 \\ 100 \text{ for } 11 < x \leq 14 \\ 125 \text{ for } 14 < x \leq 17 \end{cases}$

i $C = \begin{cases} \$3.75 \text{ for } 0 < x \leq 5 \\ \$5.25 \text{ for } 5 < x \leq 7 \\ \$6.50 \text{ for } 7 < x \leq 9 \\ \$7.75 \text{ for } 9 < x \leq 11 \end{cases}$

j $A = \begin{cases} \$25 \text{ for } 0 \leq n < 10 \\ \$22 \text{ for } 10 \leq n < 20 \\ \$18 \text{ for } 20 \leq n < 30 \\ \$15 \text{ for } 30 \leq n < 40 \end{cases}$

k $C = \begin{cases} \$185 \text{ for } 0 < n \leq 5 \\ \$215 \text{ for } 5 < n \leq 15 \\ \$250 \text{ for } 15 < n \leq 20 \\ \$260 \text{ for } n > 20 \end{cases}$

l $y = \begin{cases} 7 \text{ for } 0 \leq x < 10 \\ 10 \text{ for } 10 \leq x < 20 \\ 13 \text{ for } 20 \leq x < 30 \\ 16 \text{ for } 30 \leq x < 40 \\ 19 \text{ for } 40 \leq x < 50 \end{cases}$

m $y = \begin{cases} 2 \text{ for } 0 \leq x < 5 \\ 5 \text{ for } 5 \leq x < 13 \\ 8 \text{ for } 13 \leq x < 15 \\ 10 \text{ for } 15 \leq x < 24 \\ 11 \text{ for } x > 24 \end{cases}$

n $I = \begin{cases} -5 \text{ for } 0 < n \leq 12 \\ -1.5 \text{ for } 12 < n \leq 15 \\ 2.5 \text{ for } 15 < n \leq 21 \\ 3.75 \text{ for } n > 21 \end{cases}$

o $y = \begin{cases} -8 \text{ for } -5 < x \leq -3 \\ -1.5 \text{ for } -3 < x \leq -1 \\ 2.5 \text{ for } -1 < x \leq 1 \\ 3.75 \text{ for } 1 < x \leq 3 \\ 5 \text{ for } x > 3 \end{cases}$

p $y = \begin{cases} -12 \text{ for } -10 \leq x < -5 \\ -7 \text{ for } -5 \leq x < 1 \\ -5 \text{ for } 1 \leq x < 3 \\ 2 \text{ for } 3 \leq x < 10 \\ 5 \text{ for } x > 10 \end{cases}$

2 Louise is a party caterer. She charges per head and prices vary according to the number of guests. Use the information below to graph Louise's catering prices. Let P be the price per head and n be the number of guests.

Number of guests	$0 < n \leq 20$	$20 < n \leq 50$	$50 < n \leq 75$	$n > 75$
Price per head	\$30	\$25	\$21	\$18

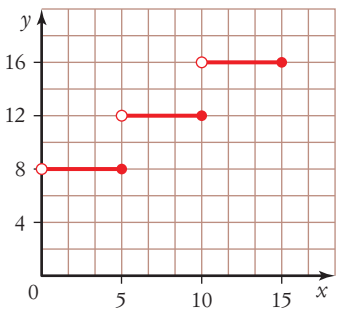
3 The owner of a limousine service charges a flat fee of \$75 for a booking. Costs are then as follows:

Number of km travelled	$0 < n \leq 10$	$10 < n \leq 25$	$25 < n \leq 60$	$60 < n \leq 100$
Cost	\$50	\$70	\$100	\$150

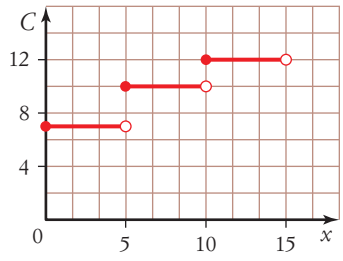
Graph the costs for hiring a limousine using this service. Be sure to include the \$75 booking fee in all of the costs.

Answers

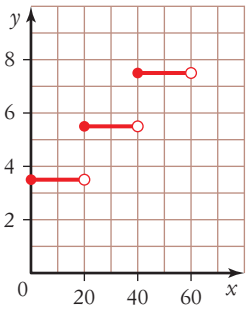
1 a



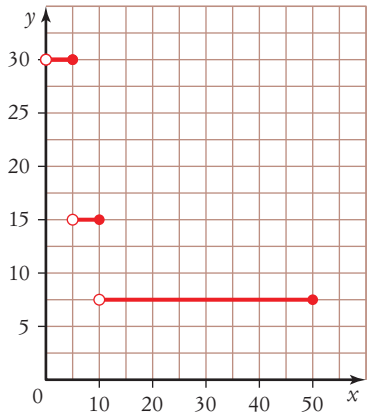
b



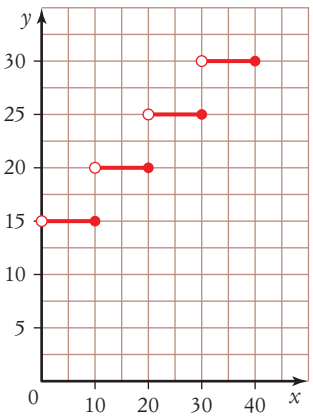
c



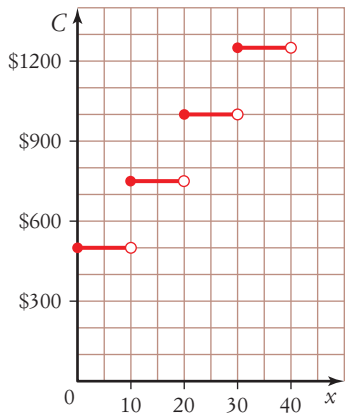
d



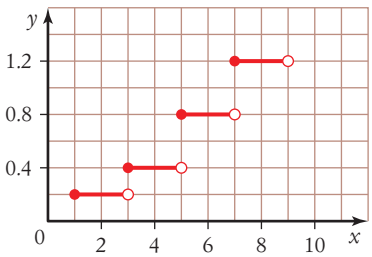
e



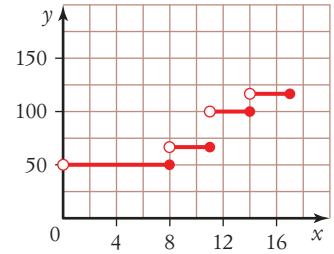
f



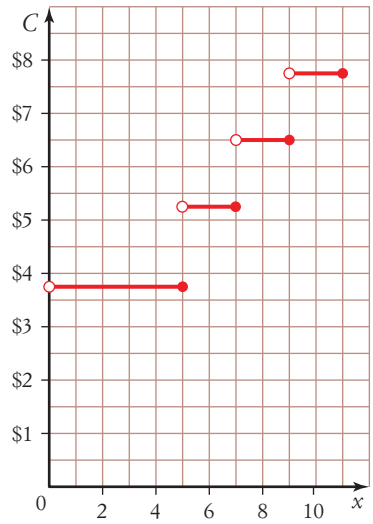
g



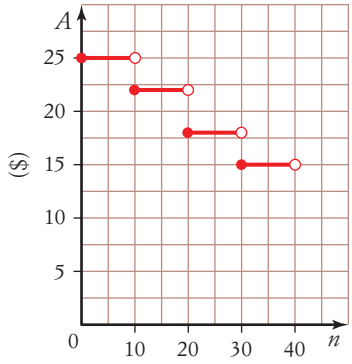
h



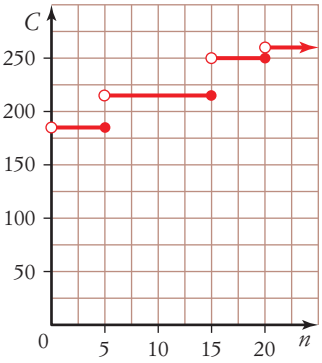
i



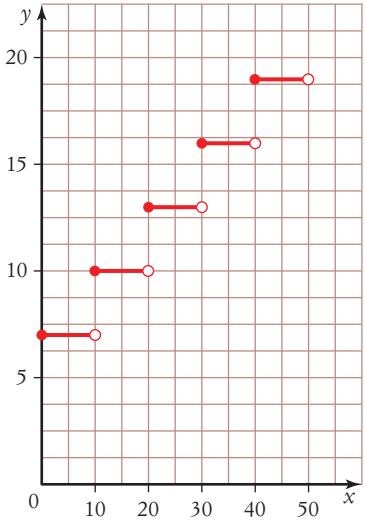
j



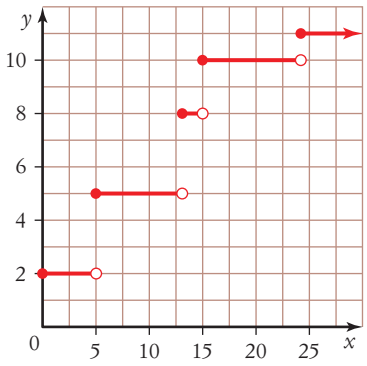
k



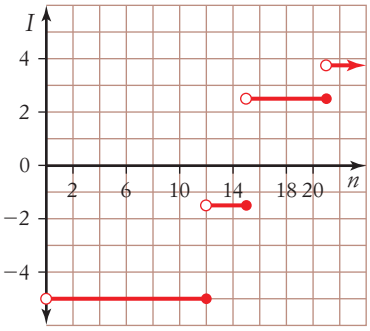
l



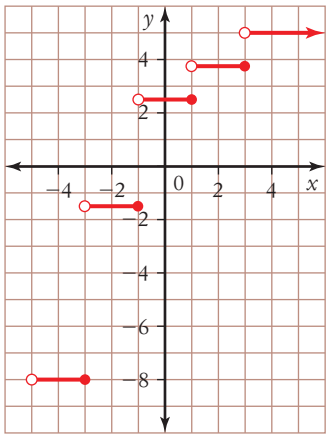
m



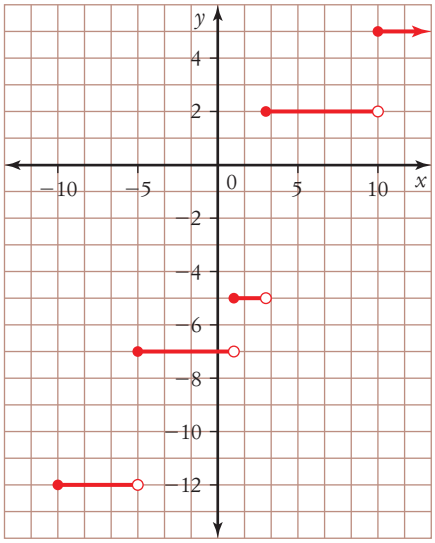
n



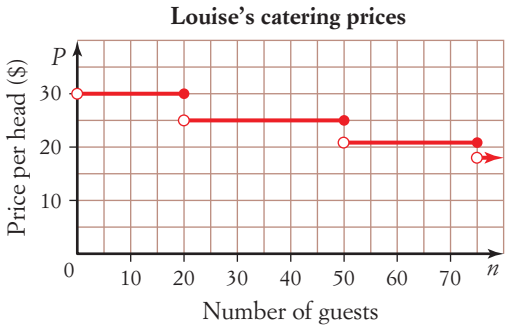
o



p



2



3