7.2 Slope-Intercept Form

1. It costs you $5.00 to join a video rental club, and $2.00 for each tape you rent overnight. You want to figure out what the total cost is for different numbers of videos rented. Using X and Y as your variables, you can represent this situation with the function:

Y=2X+5

Please fill in the left hand blanks with mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression (given) English Description

5 the cost of joining the club

2X+5 the total amount of money that you spend

2X the total cost of the video rentals

X the number of videos you rent

2 the rental cost for each tape

Y the total amount of money that you spend

(Distracters: the cost, the cost of popcorn, …)

2. Julia’s mother runs a catering business, and she often prepares the food for special events. A wedding reception is coming up and Julia’s mother wants to make her special German chocolate brownies. She wants to make enough brownies so that every guest at the reception can have 3 brownies. Luckily, Julia’s mother already has 50 of her brownies in her freezer from last week’s job, so she won’t need to make quite as many. Using X and Y as your variables, you can represent this situation with the function:

Y=3X-50

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression (given) English Description

50 the number of brownies already frozen

3X-50 the number of brownies Julia’s mother must bake

3X the total number of brownies needed for the guests

X the number of guests at the reception

3 the number of brownies each guest receives

Y the number of brownies Julia’s mother must bake

(Distracters: the number of brownies, …)

3. You are interested in buying some shirts from a mail order company. The shirts cost $20 each. In addition, there is a flat shipping and handling charge of $6.00. Using X and Y as your variables, you can represent this situation with the function:

Y=20X+6

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression English Description

6 the cost of shipping and handling

20X+6 (given) the total amount of money that you spent

20 the cost of each shirt

20X the total cost of the shirts you order

X the number of shirts you buy

Y the total amount of money that you spent

(Distracters: the cost, the cost of buttons, …)

4. Raymond has been saving up to buy a new skateboard. Right now, he has $75 in savings and he almost has enough to afford the one he wants the most. Since Raymond always saves 1/5 of his paycheck from work, he hopes to have enough for the skateboard the next time he gets paid. Using X and Y as your variables, you can represent this situation with the function:

Y=X/5+75

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression English Description

X/5 the total amount from his paycheck that is saved (1)

X the amount of money Raymond gets paid (4)

1/5 the portion of his paycheck that goes into savings (7)

Y (given) the amount he’ll have in savings after he’s paid (6)

75 the amount he has in savings right now (5)

X/5+75 the amount he’ll have in savings after he’s paid (6)

(Distracters: the cost of skateboard (3), the amount of money (2), …)

5. The wealthy producer of the lavish new Broadway musical New York Nights has put up $1,000,000 of his own money to stage the costly show. This is a risky move on his part, but since he receives 1/5 of the money raised from ticket sales, he hopes to make a profit with time. Using X and Y as your variables, you can represent this situation with the function:

Y=X/5-1000000

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression (given) English Description

1000000 the amount he contributed to stage the show (4)

X the amount the show makes from ticket sales (2)

1/5 the portion of the ticket money he receives (5)

X/5-1000000 the total profit he makes from the show (1)

X/5 the total amount he receives from ticket sales (3)

Y the total profit he makes from the show (1)

(Distracters: the cost of a show ticket (6), the number of tickets sold (7),…)

6. Lee recently won first prize in his school’s photography competition. Along with a plaque, he received a $15 gift certificate for the local photo shop. Lee is happy for his good fortune, for he was planning to go to the store to buy rolls of film for his upcoming trip to the Grand Canyon. The brand of film Lee uses costs $7 for each roll, but with the prize, he won’t have to spend as much money. Using X and Y as your variables, you can represent this situation with the function:

Y=7X-15

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression English Description

15 the amount of money Lee’s gift certificate is worth (4)

7X-15 (given) the amount of money Lee has to spend for the film (7)

7X the total cost of all the rolls of film Lee wants to buy (6)

X the number of rolls of film Lee buys (5)

7 the cost of each roll of film (2)

Y the amount of money Lee has to spend for the film (7)

(Distracters: the cost of having the film developed (1), the cost (3), …)

7. A new high-rise apartment recently opened in downtown Pittsburgh. In order to rent an apartment there, you must first pay a deposit of $500, and, after moving in, a monthly rent of $750. Using X and Y as your variables, you can represent this situation with the function:

Y=750X+500

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression (given) English Description

500 the initial deposit required for the apartment (6)

750X+500 the cost of the deposit and rent for the apartment (2)

750X the total cost of rent for the apartment (4)

X the number of months you live in the apartment (7)

750 the cost of each month’s rent for the apartment (3)

Y the cost of the deposit and rent for the apartment (2)

(Distracters: the cost of parking (5), the cost (1), …)

8. The manager of a popular new rock group receives a fixed salary of $30,000 from his agency each year. In addition, he receives 1/10 of the amount of money the group earns each year from record sales, concert tours, and media appearances. Using X and Y as your variables, you can represent this situation with the function:

Y=X/10+30,000

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression (given) English Description

X/10 the amount he makes from the band’s earnings (5)

X the band’s yearly earnings (4)

30000 the fixed yearly salary he receives (7)

X/10+30000 the total amount he makes in a year (3)

1/10 the portion of the band’s earnings he receives (6)

Y the total amount he makes in a year (3)

(Distracters: the cost of cds (2), the cost (1),…)

9. Liz borrowed $90 from her parents to buy new sneakers. Since she has absolutely no money in savings, Liz is worried about how to repay her debt. Her parents come up with a good solution. They suggest that Liz save 1/6 of her allowance for the whole year. By the end of the year, Liz should have more than enough saved to pay them back. Liz is happy with the idea, because whatever money she has left in savings can be spent on a pair of boots next year! Using X and Y as your variables, you can represent this situation with the function:

Y=X/6-90

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression English Description

90 the amount of money Liz borrowed from her parents

X/6-90 (given) the amount of money left after repaying her parents

X/6 the total amount of Liz’s allowance that she saves

X the amount Liz receives for her allowance

1/6 the portion of Liz’s allowance that she saves

Y the amount of money left after repaying her parents

(Distracters: the cost, the cost of the boots, …)

10. Alexis Fairweather is the star of the wildly popular prime-time soap opera Metropolis, and she recently signed a new contract for the next season of the show. For each episode of Metropolis in which she appears, Alexis will receive $50,000. In addition, at the end of the season, she will be given a bonus check in the amount of $100,000. Using X and Y as your variables, you can represent this situation with the function:

Y=50000X+100000

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression English Description

100000 the amount she receives as a bonus

50000X+100000 the total amount she makes all season

50000X the total amount she makes for all episodes

X the number of episodes in which she appears

50000 the amount she receives for each episode

Y (given) the total amount she makes all season

(Distracters: the amount of money, the number of seasons she has been on the show, …)

11. Rob is a member of the tennis league in his community. Every weekend, he plays matches against other members in his age group, and with each win he receives 5 points toward his ranking. Right now, Rob is ranked third, with a total of 65 points. The season is almost over, and he wants to improve his rank with match wins. Using X and Y as your variables, you can represent this situation with the function:

Y=5X+65

Please fill in the left hand blanks with the mathematical expressions and the right hand blanks with English descriptions of the expressions.

Expression (given) English Description

65 the number of points he has right now (4)

5X+65 the number of points he has at the end of the season (7)

5X the number of points he gets the rest of the season (2)

X the number of matches he wins the rest of the season (5)

5 the number of points he gets for each match win (1)

Y the number of points he has at the end of the season (7)

(Distracters: the number of points, Rob’s rank at the end of the season, …)

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