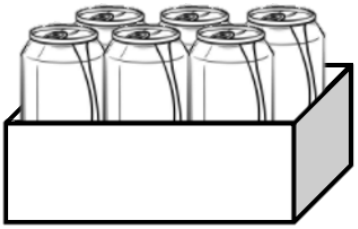
Diminishing Return

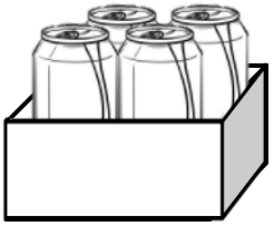
Level A

Some classes are going out for a picnic lunch. The teachers bought drinks in packs for their classes.

Thirty-three students are in Mrs. Browne's class. Mrs. Browne bought six-packs for her class. She needs helpers, so she picks students to carry one six-pack each.



Twenty-two students are in Mrs. Robinson's class. Mrs. Robinson bought four-packs for her class. She needs helpers, so she picks students to carry one four-pack each.



Which teacher had to pick more helpers?

Show how you found your answer.

Image credits: illustration by Charles A. Dana Center staff incorporating bottle image from Istock.com/visual generation / Stock illustration ID: 941632696

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Diminishing Return

Level B

Amusement Center Store

Yo-Yo $1.22

Doll $2.75

Duckie $1.85

Tractor $5.97

Airplane $6.47

Ball $2.16

Racecar $7.13

Dog $4.57

Jump Rope $1.46

Car $5.18

Elephant $3.16

Bear $4.89

Xylophone $7.11

Unicorn $6.45

Checkers $4.77

Boat $8.04

Train $6.71

Jacks $2.31

Truck $6.21

Whistle 98¢

Pinwheel 87¢

Mia has earned $43.94 worth of tokens playing games at the amusement center. The store in the amusement center has the toys shown above for sale. Mia plans to buy toys and donate them to a local charity for needy children. The tokens are only good in this store, so she plans to spend all of her tokens. What combinations of different toys can she buy in order to spend all the tokens?

Show how you found your solution.

Is your solution the only possible answer? Explain.

Image credits: Courtesy Inside Mathematics except for rag doll image in top row, which is from iStock / kathykonkle, Stock illustration ID:165800130

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Diminishing Return

Level C

Maxine and Sammie have lawns that are the same size. Maxine can mow her lawn in 24 minutes, and Sammie can mow his lawn in 36 minutes. After how many minutes will Sammie have twice as much lawn to mow as Maxine?

Maxine and Sammie also have to mow their parking strips, which are the same size. Maxine can mow her parking strip in 6 minutes, and Sammie can mow his parking strip in 9 minutes. After how many minutes will Sammie have twice as much grass to mow as Maxine?

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Diminishing Return

Level D

Rollie borrowed some money from his sister.

Their brother wanted to know how much Rollie borrowed, but Rollie wouldn't tell him.

Instead, Rollie gave his brother a riddle.

"Each month, I paid our sister one-third of the amount I still owed her plus an additional $3. At the end of 3 months, I still owed her $3."

Solve the riddle to find out how much money Rollie borrowed from his sister.

Explain how you arrived at your solution.

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Diminishing Return

Level E

The probability of being born a male is 0.466.

The probability of being born in North America is 0.153846.

The probability of being born in an urban location is 0.3571428.

Find the exact probability that a baby will be born a male, in North America, in an urban location.

Explain the method you used to find your solution.

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