Grade 9 Mathematics Worksheet

Functions and equations

Questions:

1. Joan works in a coffee shop for five hours a day and gets paid R25 per hour. She only works for 5 days of the week. She makes on average R650 on tips for a 20 day working month. Which equation below represents her monthly income, I?

   A) $I = 25(5)(4) + 650$
   B) $I = 4(25(5) + 650)$
   C) $I = 25^2(4) + 650$
   D) $I = 4(25^2 + 650)$

2. Julius, John and Pieter are three top athletes in their school. Together they scored 129 points for their team. Julius scored twice as many points as Pieter, who in turn scored 25 more points than John. If Pieter scored *x* points, which equation represents this situation best?

   A) $4x + 75 = 129$
   B) $4x - 50 = 129$
   C) $4x - 25 = 129$
   D) $4x + 25 = 129$

3. The graph below represents the charge per day from two car rental companies. Company A charges an initial fee of R120 and then charges R25 per day. Company B charges no initial fee, but charges R65 a day. According to the graph...

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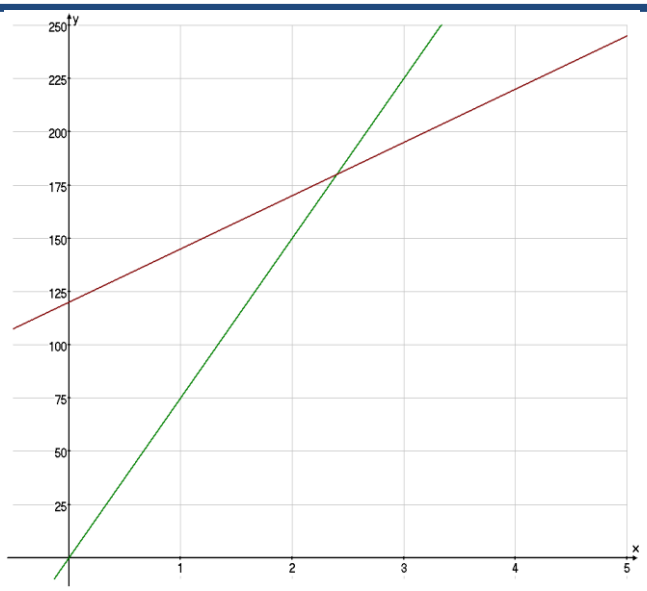

A) Company A is cheaper
B) Company B is cheaper
C) Company B is cheaper if you hire the car for two days.
D) Company A is cheaper if you hire the car for more than two days

4. The fine for speeding is measured as a function of the speed of the car. The amount of the fine can be determined by the rule $F = 15(\text{Speed of car} - (\text{Speed limit} + 10)) + 200$. If you drive 120km/h in a speed zone of 90km/h, you will pay…..

A) R 800
B) R 500
C) R 650
D) R 550

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Solution:

1. $I = 25 \times 5 \times 5 \times 4 + 650 = 25^2(4) + 650$. Thus correct answer is (C).

2. Julius + Pieter + John = 129.
   Julius = 2 Pieter
   Pieter = John + 25
   If Pieter scored *x* points:
   x = John + 25 so then John = *x* – 25. Julius = 2*x*.
   So finally then
   $2x + x - 25 + x = 129$
   $\therefore 4x - 25 = 129$
   The correct answer is thus (C).

3. (D) – Since this becomes the cheaper option when the car is hired for longer than two days.

4.

$$F = 15(\text{Speed of car} - (\text{Speed limit} + 10)) + 200 = 15(120 - (90 + 10)) + 200 = 15(20) + 200 = 500$$

The correct answer is thus (B).

This warning and advice must be included if this question is used in an assessment.

A and B are not individually the best choice of car rental company. There is more to just choosing one of the two. It all depends on how long you are renting the vehicle for.

The graphs are also not labelled, and this is deliberate so that learners must identify which graph represents the different companies from the information that is given.

This question can actually be asked from grade 7 level onwards.