Direct and partial variation: real-life problems worksheet – Grade 9

Grade 9 · Mixed level · 20 questions · **Version X8733**

Name: _____ Date: _____ Score: ___ / 20

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1. A cyclist rides at a steady 15 km/h. The distance varies directly with the time. What is the distance for 5 h? (km)

   Answer: _____ km

2. The distance travelled varies directly with the time. If you multiply the time by 2, what happens to the distance?

   A. It is multiplied by 2 **B.** It goes up by 2 **C.** It is divided by 2 **D.** It stays the same

3. The pay varies directly with the hours worked. If you multiply the hours worked by 4, what happens to the pay?

   A. It is multiplied by 4 **B.** It goes up by 4 **C.** It is divided by 4 **D.** It stays the same

4. Gasoline sells for $\$1.60$ per litre. The cost varies directly with the number of litres. What is the cost for 30 L of gas? (dollars)

   Answer: $_____

5. Water flows into an empty tank at 12 L per minute. The volume varies directly with the time. What is the volume for 12 min? (L)

   Answer: _____ L

6. Each copy of a textbook has a mass of 0.6 kg. The mass varies directly with the number of books. What is the mass for a stack of 12 books? (kg)

   Answer: _____ kg

7. The volume of water in the tank varies directly with the time. If you multiply the time by 3, what happens to the volume?

   A. It is multiplied by 3 **B.** It goes up by 3 **C.** It is divided by 3 **D.** It stays the same

8. The cost varies directly with the number of litres. For 35 L of gas, the cost is $\$50.75$. What is the cost for 60 L of gas? (dollars)

   Answer: $_____

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9. The table shows a direct variation. What is the constant of variation, k?

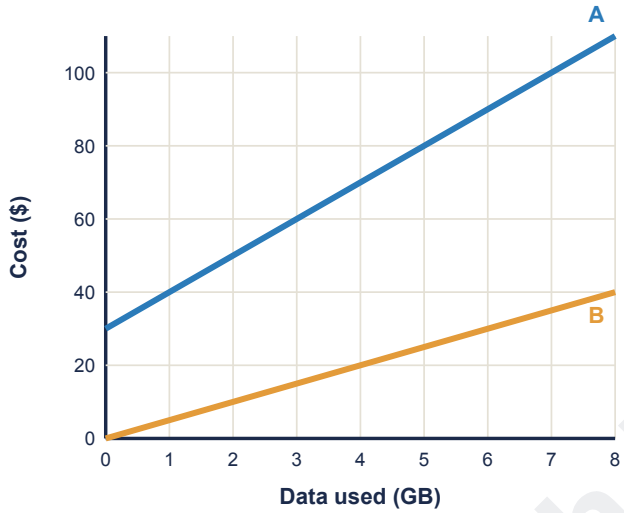
Time worked (h)	0	2	2	3	4
Pay ($)	0	30	30	45	60

Answer: _____

10. The distance varies directly with the time. For 5 h, the distance is 120 km. How many hours does it take to ride 60 km? (h)

Answer: _____ hours

11. Which line on the graph shows a direct variation?



A. Line A **B.** Line B **C.** Both **D.** Neither

12. The volume varies directly with the time. For 12 min, the volume is 480 L. What is the volume for 8 min? (L)

Answer: _____ L

13. The cost varies directly with the length. For 36 m of fence, the cost is $\$1152$. How many metres of fence cost $\$768$? (m)

Answer: _____ m

14. The mass varies directly with the number of books. For a stack of 24 books, the mass is 18 kg. What is the mass for a stack of 8 books? (kg)

Answer: _____ kg

15. A bike rental shop charges a fixed fee of $\$8$ plus $\$5$ per hour. The fixed fee goes up, but the rate stays the same. How does the graph of cost change?

A. It is steeper, with the same starting point **B.** It moves down, with the same steepness

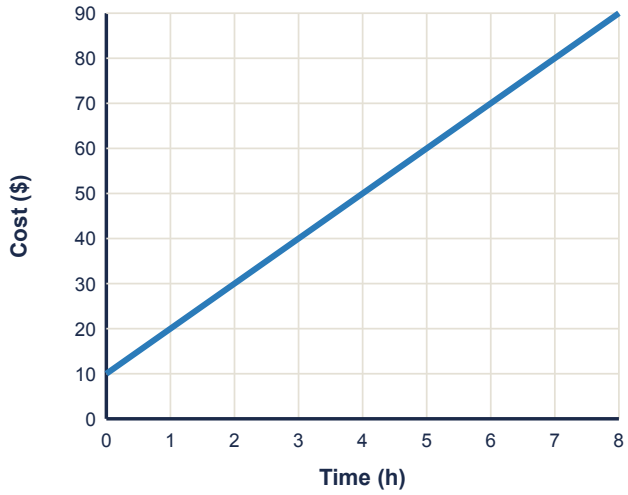
C. It moves up, with the same steepness **D.** It is less steep, with the same starting point

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16. A taxi charges a starting fare of $\$5$ plus $\$1.75$ per kilometre. What is the total cost for 12 km? (dollars)

    Answer: $_____

17. The graph shows the cost of renting a bike. What is the fixed fee? (dollars)



    Answer: $_____

18. A bike rental shop charges $\$25$ for 2 hours and $\$40$ for 4 hours. The cost is a fixed amount plus a rate per hour. What is the fixed amount? (dollars)

    Answer: $_____

19. Is this a direct variation or a partial variation? Water flows into an empty tank at 40 L per minute.

    A. Direct variation **B.** Partial variation

20. A plumber charges $\$232.50$ for 1.5 hours and $\$375$ for 3 hours. The cost is a fixed amount plus a rate per hour. What is the fixed amount? (dollars)

    Answer: $_____

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Answer key · Version X8733

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1. **75**
2. **A (It is multiplied by 2)**
3. **A (It is multiplied by 4)**
4. **48.00**
5. **144**
6. **7.2**
7. **A (It is multiplied by 3)**
8. **87.00**
9. **15**
10. **2.5**
11. **B (Line B)**
12. **320**
13. **24**
14. **6**
15. **C (It moves up, with the same steepness)**
16. **26.00**
17. **10.00**
18. **10.00**
19. **A (Direct variation)**
20. **90.00**

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