

**A2.A.5: Inverse Variation 4: Use direct and inverse variation to solve for unknown values**

- 1 Which statement is true if  $r$  varies inversely as  $s$ ?
  - 1) Their difference will be constant.
  - 2) Their sum will be constant.
  - 3) Their quotient will be constant.
  - 4) Their product will be constant.
- 2 Which equation shows that  $p$  varies inversely as  $q$ ?
  - 1)  $p = 10q$
  - 2)  $pq = 10$
  - 3)  $p = 10 + q$
  - 4)  $q = p^2 + 10$
- 3 If  $x$  varies inversely as  $y$ , which statement is true?
  - 1) When  $x$  is multiplied by 2,  $y$  is multiplied by 2.
  - 2) When  $x$  is multiplied by 2,  $y$  is divided by 2.
  - 3) When  $x$  is divided by 2,  $y$  is divided by 2.
  - 4) When  $x$  is increased by 2,  $y$  is decreased by 2.
- 4 In the accompanying table,  $y$  varies inversely as  $x$ . What is the value of  $m$ .

|     |    |   |     |
|-----|----|---|-----|
| $x$ | 2  | 4 | $m$ |
| $y$ | 18 | 9 | 3   |
- 5 If  $x$  varies inversely as  $y$ , and  $x = -34$  when  $y = -2$ , find the value of  $x$  when  $y = 4$ .
- 6 If  $x$  varies inversely as  $y$ , and  $x = 9$  when  $y = 8$ , find  $x$  when  $y = 12$ .
- 7 If  $x$  varies inversely as  $y$  and  $x = 12$  when  $y = 4$ , what is the value of  $y$  when  $x = 16$ ?
- 8 If  $x$  varies inversely as  $y$  and  $x = 8$  when  $y = 3$ , find the value of  $x$  when  $y = 6$ .
- 9 If  $x$  varies inversely as  $y$ , and  $x = 10$  when  $y = 12$ , what is the value of  $x$  when  $y = 8$ ?
- 10 If  $P$  varies inversely as  $V$ , and  $P = 700$  when  $V = 8$ , find the value of  $V$  when  $P = 350$ .
- 11 The width of a rectangle with constant area varies inversely as its length. If the width is 4 when the length is 12, find the width when the length is 16.
- 12 According to Boyle's Law, the pressure of a compressed gas is inversely proportional to the volume. If the pressure is 25 pounds per square inch when the volume of gas is 400 cubic inches, find the pressure, in pounds per square inch, when the gas is compressed to 200 cubic inches?
- 13 The speed of a gear varies inversely as the number of teeth it has. If a gear with 24 teeth rotates at a speed of 45 revolutions per minute, how many revolutions per minute will a gear with 36 teeth make?
- 14 The diameter of a wheel varies inversely as the number of revolutions that the wheel makes to cover a certain distance. If a wheel with a 26-inch diameter makes 10 revolutions in covering a certain distance, how many revolutions will a wheel with a diameter of 20 inches make in covering the same distance?

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**Answer Section**

1 ANS: 4 REF: 080229siii

2 ANS: 2 REF: 019433siii

3 ANS: 2 REF: 019532siii

4 ANS:  
12

REF: 019814siii

5 ANS:  
17

REF: 010417siii

6 ANS:  
6

REF: 019714siii

7 ANS:  
3

REF: 089815siii

8 ANS:  
4

REF: 010208siii

9 ANS:  
15

REF: 060315siii

10 ANS:  
16

REF: 069814siii

11 ANS:  
3

REF: 019914siii

12 ANS:  
50

REF: 089338siii

13 ANS:  
30

REF: 080314siii

14 ANS:  
13

REF: 089509siii