

1. Answer each of the following questions, showing all working:

- (1) Find  $|-27 + 6|$
- (2) Find  $18 \div 3 + 3$  and  $18 \div (3 + 3)$
- (3) What is the highest common factor of 18 and 15 ?
- (4) Is 70 a prime number? Why?
- (5)
  - i. Write 16 as the product of prime factors.
  - ii. Write 10 as the product of prime factors.
  - iii. Are 16 and 10 relatively prime?
  - iv. Write 160 as the product of prime factors. (Hint:  $160 = 16 \times 10$ ).
- (6) Find  $\frac{-11}{14} \times \frac{5}{11}$
- (7) Find  $\frac{4}{-8} \div \frac{3}{-3}$
- (8) Find  $\frac{-7}{8} + \frac{3}{4}$
- (9) Find  $\frac{-12}{5} - \frac{5}{3}$
- (10) Find  $\left(\frac{8}{1} - \frac{-4}{-7}\right) \times \frac{-6}{40} \times \frac{8}{6}$
- (11) Evaluate  $(-1)^3$ .
- (12) A machine has 4 wheels, making 6, 58, 28 and 24 revolutions (respectively) per minute. At time 0, each of the wheels starts with a certain marked point on its circumference pointing directly downwards. At what time will all of the wheels first come back together in the same starting position?

2. Answer each of the following questions, showing all working:

- (1) Find  $-|-2 + 30|$
- (2) Find  $20 \div 2 \div 2$  and  $20 \div (2 \div 2)$
- (3) What is the highest common factor of 21 and 17 ?
- (4) Is 3 a prime number? Why?
- (5)
  - i. Write 68 as the product of prime factors.
  - ii. Write 70 as the product of prime factors.
  - iii. Are 68 and 70 relatively prime?
  - iv. Write 4760 as the product of prime factors. (Hint:  $4760 = 68 \times 70$ ).
- (6) Find  $\frac{-2}{14} \times \frac{1}{-10}$
- (7) Find  $\frac{-14}{10} \div \frac{6}{9}$
- (8) Find  $\frac{-13}{2} + \frac{-1}{15}$
- (9) Find  $\frac{7}{3} - \frac{-7}{10}$
- (10) Find  $\frac{-2}{-8} \times \frac{8}{-49} \div \left(\frac{47}{-38} + \frac{-28}{-38}\right)$
- (11) Evaluate  $(-5)^2$ .

- (12) A machine has 4 wheels, making 23, 22, 55 and 35 revolutions (respectively) per minute. At time 0, each of the wheels starts with a certain marked point on its circumference pointing directly downwards. At what time will all of the wheels first come back together in the same starting position?

3. Answer each of the following questions, showing all working:

- (1) Find  $|-44 - 29|$
- (2) Find  $6 \times 5 + 6$  and  $6 \times (5 + 6)$
- (3) What is the highest common factor of 10 and 26 ?
- (4) Is 100 a prime number? Why?
- (5)
  - i. Write 30 as the product of prime factors.
  - ii. Write 21 as the product of prime factors.
  - iii. Are 30 and 21 relatively prime?
  - iv. Write 630 as the product of prime factors. (Hint:  $630 = 30 \times 21$ ).
- (6) Find  $\frac{7}{17} \times \frac{0}{-15}$
- (7) Find  $\frac{13}{9} \div \frac{14}{7}$
- (8) Find  $\frac{-1}{3} + \frac{15}{17}$
- (9) Find  $\frac{-7}{5} - \frac{-10}{4}$
- (10) Find  $\frac{0}{7} \times \frac{-6}{44} - \frac{3}{-18} + \frac{21}{-48}$
- (11) Evaluate  $(-3)^3$ .
- (12) A machine has 4 wheels, making 58, 16, 2 and 28 revolutions (respectively) per minute. At time 0, each of the wheels starts with a certain marked point on its circumference pointing directly downwards. At what time will all of the wheels first come back together in the same starting position?

4. Answer each of the following questions, showing all working:

- (1) Find  $|-48.7|$
- (2) Find  $6 \times 7 - 2$  and  $6 \times (7 - 2)$
- (3) What is the highest common factor of 20 and 22 ?
- (4) Is 50 a prime number? Why?
- (5)
  - i. Write 52 as the product of prime factors.
  - ii. Write 100 as the product of prime factors.
  - iii. Are 52 and 100 relatively prime?
  - iv. Write 5200 as the product of prime factors. (Hint:  $5200 = 52 \times 100$ ).
- (6) Find  $\frac{-13}{3} \times \frac{-7}{20}$
- (7) Find  $\frac{-5}{14} \div \frac{18}{14}$
- (8) Find  $\frac{-13}{2} + \frac{10}{11}$
- (9) Find  $\frac{7}{-5} - \frac{-9}{10}$
- (10) Find  $\frac{-10}{-2} \div \frac{22}{-5} - \frac{55}{-22} + \frac{-44}{-11}$

- (11) Evaluate  $(-1)^3$ .
- (12) A machine has 4 wheels, making 54, 27, 33 and 42 revolutions (respectively) per minute. At time 0, each of the wheels starts with a certain marked point on its circumference pointing directly downwards. At what time will all of the wheels first come back together in the same starting position?

5. Answer each of the following questions, showing all working:

- (1) Find  $-|-3|$
- (2) Find  $96 \div 4 \times 6$  and  $96 \div (4 \times 6)$
- (3) What is the highest common factor of 37 and 20 ?
- (4) Is 54 a prime number? Why?
- (5) i. Write 76 as the product of prime factors.  
ii. Write 77 as the product of prime factors.  
iii. Are 76 and 77 relatively prime?  
iv. Write 5852 as the product of prime factors. (Hint:  $5852 = 76 \times 77$ ).
- (6) Find  $\frac{-12}{1} \times \frac{7}{15}$
- (7) Find  $\frac{14}{8} \div \frac{3}{3}$
- (8) Find  $\frac{-10}{8} + \frac{13}{2}$
- (9) Find  $\frac{7}{20} - \frac{-4}{3}$
- (10) Find  $\frac{-2}{10} \times \frac{52}{-36} \times \frac{-54}{20} - \frac{-60}{50}$
- (11) Evaluate  $(-4)^1$ .
- (12) A machine has 2 wheels, making 2 and 54 revolutions (respectively) per minute. At time 0, each of the wheels starts with a certain marked point on its circumference pointing directly downwards. At what time will all of the wheels first come back together in the same starting position?