Multiple-choice section – choose the correct answer

Question 1 [1.4]

The sum of the product of -5 and 4 with the quotient of 40 and -8 is:

A -6 B 31 C -25 D 12

Question 2 [1.5]

-(-7)3 =

A 21 B -21 C -343 D 343

Question 3 [1.4]



A 4 B -2 C 2 D -10

Question 4 [1.4]

-14 + 21 × -4 + 35 =

A 7 B -7 C 63 D -63

Question 5 [1.4]



A -15 B 15 C -11 D 11

Question 6 [1.4]

-52 + 32 × (-4 – 8) =

A -11 B 133 C -133 D -83

Question 7 [1.5]

(26 × -22) ÷ -24 =

A 1 B 2 C 16 D -32

Question 8 [1.6]

=

A -3 B 3 C -2 D 2

Question 9 [1.4]

(2 × 3)2 ÷ (3 × 4)2 =

A 180 B  C 4 D 

Question 10 [1.1]

The minimum overnight temperature was 22 °C. By mid-afternoon, the temperature had risen by 13 °C. In the evening the temperature had dropped to 18 °C. The number sentence that describes this temperature change is:

A 22 + -13 + -18 = 27 B -22 + 13 + 18 = 9

C 22 + 13 - 17 = 18 D -22 + 13 + 27 = 18

Multiple-choice results: \_\_\_ / 10

Short answer section

Question 11 2 marks [1.1]

Write a directed number to show each of the following.

(a) Getting a $40 refund when a faulty music player was returned to the store. \_\_\_\_\_\_\_\_

(b) Being penalised 50 m in a game of AFL after not returning the football properly to your opponent. \_\_\_\_\_\_\_\_

Question 12 2 marks [1.1]

Evaluate:

(a) -30 + (-16) + (-19)

(b) -21 – (-12) + (-11)

Question 13 4 marks [1.1]

The minimum temperatures recorded by a faulty weather station at Mt Buller one week were:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Day | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
| Temperature | -15 °C | 12 °C | -3 °C | 0 °C | 21 °C | -38 °C | 7 °C |

(a) Which day had the lowest minimum temperature? \_\_\_\_\_\_\_\_\_\_\_\_

(b) Which day recorded the highest minimum temperature? \_\_\_\_\_\_\_\_\_\_\_\_

(c) Between which two days did the biggest change in the recorded temperature occur, and what was the change? \_\_\_\_\_\_\_\_\_\_\_\_

Question 14 2 marks [1.2]

Find the following products.

(a) 51 × -13

(b) -32 × -21

Question 15 2 marks [1.2]

Evaluate the following.

(a) (-11)2 – (31)2

(b) (-11)2 – (18)2 + (-31)2

Question 16 3 marks [1.2]

A sports store is selling tennis racquets at below ‘cost price’ (the price that the store bought them for). Wilson racquets that were bought for $91 were sold for $78 in the sale, while Head racquets that were bought for $114 were sold for $88 in the sale.

Find the loss made when 17 Wilson racquets and 21 Head racquets are sold in the sale.

Question 17 2 marks [1.2]

A six-sided die has the letters A, B, C, D, E and F on its faces. A is worth 2 points, B is worth -7 points, C is 5 points, D is -11 points, E is 8 points and F is -18 points. Find the total score for the following rolls:  
A, A, B, B, E, E, E, F.

Question 18 2 marks [1.3]

Find the following quotients.

(a) -189 ÷ -7

(b) 152 ÷ -8

Question 19 2 marks [1.3]

The temperature inside a freezer fell from 7°C at 10 pm to -2°C at 4 am. Find the average change in temperature per hour by dividing the overall temperature change by the number of hours.

Question 20 4 marks [1.4]

Evaluate the following.

(a) (-7 – 2 – 6)  (-8 – 4 – 5)

(b) 117 ÷ -9 + (-78) ÷ 3

Question 21 4 marks [1.4]

Evaluate the following.

(a) (7 – 24)2 – 3 ×

(b) -3 × -12 – (-60 ÷ -3) + (-11)

Question 22 3 marks [1.4]

A company made a loss of $8.5 million per month for 4 months and then made a profit of   
$3.5 million per month for 8 months. What was the company’s final result for the end of the year?

Question 23 4 marks [1.5]

Evaluate the following.

(a) 154 ÷ (-15)2

(b) 

Question 24 3 marks [1.6]

Solve the following for *x.*

(a) 3*x* ÷ 37 = 1

(b) 3*x* ÷ (32)3 = 39

Question 25 2 marks [1.6]

The prime factors for the number 12 are 22 × 3 because 12 = 2 × 2 × 3. Write the prime factors for 225 in index form.

Short answer results: \_\_\_ / 41

Extended answer section

Question 26 4 marks [1.1]

Two submarines are travelling at sea. The first submarine starts at sea level, dives to 29 m below the surface, then moves 17 m towards the surface and finally dives another 14 m.

(a) Write the journey of this submarine in terms of directed numbers.

(b) What is the final position of the first submarine?

(c) The second submarine starts 16 m below the surface, then dives a further 17 m and finally moves 9 m back towards the surface.  
What is the final position of the second submarine?

(d) Describe the position of the second submarine, relative to the first.

Question 27 5 marks [1.2]

Jessie likes to think about directed numbers in terms of a credit card account and its balance. Any transaction that increases the balance is negative (the amount owed), while a transaction that decreases the account is positive (paying off the amount owed). She pays money into the account (negative), makes cash withdrawals (positive), makes purchases (positive) and has unauthorised purchases refunded (negative).  
For example, one day she paid in three lots of $13, so her account balance decreased by  
3 × -$13 = -$39.  
On another day, she made four cash withdrawals of $18 each. This increased the balance by  
3 × $18 = +$54.  
Write the mathematical statements and answers for the following situations on Jessie’s credit card.

(a) Jessie made three purchases of $22 each and seven cash withdrawals of $32 each.

(b) Jessie pays in $28 on each of six occasions and receives five refunds of $13 each for unauthorised purchases and made 13 purchases of $62 each.

Extended answer results: \_\_\_ / 9

TOTAL test results: \_\_\_ / 60