

## Topic 2 Number (Pre-TT) [39] MARKSCHEME

1.

|      |  |                       |    |
|------|--|-----------------------|----|
| 9(a) |  | $4.23 \times 10^{-4}$ | B1 |
| (b)  |  | 45000                 | B1 |

2.

|              |           |
|--------------|-----------|
| <b>0.667</b> | <b>B1</b> |
|--------------|-----------|

3.

(a)  $144 = 2 \times 72$  or  $3 \times 48$  M1  
*Any prime factor*

Breakdown into 2 and 3 M1  
 ie  $2 \times 2 \times 2 \times 2 \times 3 \times 3$   
*Exploding tree or division to 2 and 3*

$= 2^4 \times 3^2$  A1  
*SC2  $2^4, 3^2$  or  $2^4 + 3^2$*   
*(A0 for  $1 \times 2^4 \times 3^2$  etc)*

(b)  $60 = 2^2 \times 3 \times 5$   
*B1 for  $2^2 \times 3 \times 5$*

HCF is 12 B2  
*Accept  $2^2 \times 3$*   
*B1 for 6*

[5]

4.

|                         |           |
|-------------------------|-----------|
| <b><math>3^8</math></b> | <b>B1</b> |
|-------------------------|-----------|

5.

$3\frac{9+10}{15}$  M1 [1]  
*Integers + one of fractions correct*

$4\frac{4}{15}$  A1

[2]

6.

(a)  $12.9 \times 10^5$  M1

$1.29 \times 10^6$  A1  
*SCI for 1 290 000 or  $1.3 \times 10^6$*

(b)  $6.4 \times 10^3$  B2

*B1 for  $10^8 \times 10^{-5} = 10^3$*   
*SCI for 6400*

[4]

7.

|   |       |   |
|---|-------|---|
| $\frac{11}{4} \times \frac{12}{7}$  | M1    | Converts both fractions to improper with at least one correct |
| $\frac{\text{their } 11 \times \text{their } 12}{\text{their } 4 \times \text{their } 7}$ or $\frac{132}{28}$<br>or $4 \frac{20}{28}$ or $\frac{33}{7}$ | M1dep | oe fraction   |
| $4 \frac{5}{7}$   | A1    |   |

8.

- (a)  $m^7$  B1  
 $p^3$  B1  
(b)  $q^8$  B1

[3]

9.

|                     |    |  |
|---------------------|----|--|
| $2.376 \times 10^4$ | B2 | B1 ( $a =$ ) 2.4 or<br>24 000 and 240 or<br>23 760 or<br>value calculated that is correctly converted to standard form |
|---------------------|----|--|

10.

- (a)  $c^4$  B1  
(b)  $d^5$  B1  
(c)  $1/e^7$  or  $e^{-7}$  B1  
(d)  $6g^5h^5$  B2

*-1 eeo (see below)*

*In (d) e.g.  $6g^5 \times 2h^5$  scores B2 - 1;  
 $6g^5 \times 2h^4$  scores B2 - 2;  
 $6 + g^5 + h^5$  scores B2 - 1;  
 $5 + g^5 + h^5$  scores B2 - 2*

[5]

11.

|     |                                       |   |  |   |
|-----|---------------------------------------|---|--|---|
| (a) | 16 42                                 | <b>4</b><br>1 AO1.3b<br>2 AO3.1d<br>1 AO3.3 | <b>B2</b> for 90 (LCM) identified<br>or<br><b>M1</b> for multiples of 15 and 18 up to at least 90<br><br><b>M1</b> for 15 12 + <i>their</i> LCM in hours and minutes                               |   |
| (b) | any two different correct assumptions | <b>2</b><br>2 AO3.4a                        | <b>B1</b> for each one<br>e.g. the trains always run on time or there is no 'hold-up' and the trains stop in the station for less than 3 minutes/a very short time or we use only the arrival time | i.e. if a train is in the station for 4 minutes then the 15 27 will still be there when the 15 30 arrives |

12.

|     |                 |                      |  |   |
|-----|-----------------|----------------------|--|---|
| (a) | 0.63            | <b>2</b><br>2 AO1.3a | <b>M1</b> for 0.63... or $7 \div 11$ shown in working  |   |
| (b) | $\frac{11}{30}$ | <b>3</b><br>3 AO1.3b | <b>B2</b> for $\frac{33}{90}$<br>Or <b>M1</b> for 3.66... and 36.66... <b>seen</b><br>or answer $\frac{k}{90}$ | Allow other correct values to equate decimals for <b>M1</b> e.g. 0.366 and 3.66 . |