Practice Set 10.1 8th Std Maths Answers Chapter 10 Division of Polynomials

Question 1.
Divide and write the quotient and the remainder.
i. $21m^2 \div 7m$
ii. $40a^3 \div (-10a)$
iii. $(- 48p^4) \div (- 9p^2)$
iv. $40m^5 \div 30m^3$
v. $(5x^3 - 3x^2) \div x^2$
vi. $(8p^3 - 4p^2) \div 2p^2$
vii. $(2y^3 + 4y^2 + 3) \div 2y^2$
viii. $(21x^4 - 14x^2 + 7x) \div 7x^3$
ix. $(6x^5 - 4x^4 + 8x^3 + 2x^2) \div 2x^2$
x. $(25m^4 - 15m^3 + 10m + 8) \div 5m^3$
Solution:
i. $21m^2 \div 7m$

$$\begin{array}{r|l} & 3m \\ \hline 7m & 21m^2 \\ & -21m^2 \\ \hline & 0 \end{array}$$

Explanation:
$7m \times \boxed{3m} = 21m^2$

∴ Quotient = 3m
Remainder = 0

ii. $40a^3 \div (-10a)$

$$\begin{array}{r|l} & -4a^2 \\ \hline -10a & 40a^3 \\ & -40a^3 \\ \hline & 0 \end{array}$$

Explanation:
$-10a \times \boxed{-4a^2} = 40a^3$

∴ Quotient = $-4a^2$
Remainder = 0

iii. $(- 48p^4) \div (- 9p^2)$

$$\begin{array}{r|l} & \frac{16}{3}p^2 \\ \hline -9p^2 & -48p^4 \\ & +48p^4 \\ \hline & 0 \end{array}$$

Explanation:
$-9p^2 \times \frac{48p^4}{9p^2} = -48p^4$
$\therefore \quad -9p^2 \times \boxed{\frac{16}{3}p^2} = -48p^4$

∴ Quotient = $\frac{16}{3} p^2$
Remainder = 0

iv. $40m^5 \div 30m^3$

$$\begin{array}{r} \frac{16}{3}p^2 \\ -9p^2 \overline{)-48p^4} \\ -48p^4 \\ + \\ \hline 0 \end{array}$$

Explanation:

$$-9p^2 \times \frac{48p^4}{9p^2} = -48p^4$$

$$\therefore \quad -9p^2 \times \boxed{\frac{16}{3}p^2} = -48p^4$$

$\therefore$ Quotient = $4\frac{1}{3}$ m^2
Remainder = 0

v. $(5x^3 - 3x^2) \div x^2$

$$\begin{array}{r} 5x - 3 \\ x^2 \overline{)5x^3 - 3x^2} \\ 5x^3 \\ - \\ \hline 0 - 3x^2 \\ -3x^2 \\ + \\ \hline 0 \end{array}$$

Explanation:

i. $x^2 \times \boxed{5x} = 5x^3$

ii. $x^2 \times \boxed{-3} = -3x^2$

$\therefore$ Quotient = $5x - 3$
Remainder = 0

vi. $(8p^3 - 4p^2) \div 2p^2$

$$\begin{array}{r} 4p - 2 \\ 2p^2 \overline{)8p^3 - 4p^2} \\ 8p^3 \\ - \\ \hline 0 - 4p^2 \\ -4p^2 \\ + \\ \hline 0 \end{array}$$

Explanation:

i. $2p^2 \times \boxed{4p} = 8p^3$

ii. $2p^2 \times \boxed{-2} = -4p^2$

$\therefore$ Quotient = $4p - 2$
Remainder = 0

vii. $(2y^3 + 4y^2 + 3) \div 2y^2$

$$
\begin{array}{r|l}
2y^2 \overline{)\,2y^3 + 4y^2 + 3} & \text{Explanation:} \\
\underline{-\,2y^3} & \text{i.} \quad 2y^2 \times \boxed{y} = 2y^3 \\
0 + 4y^2 + 3 & \text{ii.} \quad 2y^2 \times \boxed{2} = 4y^2 \\
\underline{-\,4y^2} & \\
0 + 3 &
\end{array}
$$

$\therefore$ Quotient = $y + 2$
Remainder = 3

viii. $(21x^4 - 14x^2 + 7x) \div 7x^3$

$$
\begin{array}{r|l}
7x^3 \overline{)\,21x^4 - 14x^2 + 7x} & \text{Explanation:} \\
\underline{-\,21x^4} & 7x^3 \times \boxed{3x} = 21x^4 \\
0 - 14x^2 + 7x &
\end{array}
$$

$\therefore$ Quotient = $3x$
Remainder = $-14x^2 + 7x$

ix. $(6x^5 - 4x^4 + 8x^3 + 2x^2) \div 2x^2$

$$
\begin{array}{r|l}
2x^2 \overline{)\,6x^5 - 4x^4 + 8x^3 + 2x^2} & \text{Explanation:} \\
\underline{-\,6x^5} & \text{i.} \quad 2x^2 \times \boxed{3x^3} = 6x^5 \\
0 - 4x^4 + 8x^3 + 2x^2 & \text{ii.} \quad 2x^2 \times \boxed{-2x^2} = -4x^4 \\
\underline{+\,4x^4} & \text{iii.} \quad 2x^2 \times \boxed{4x} = 8x^3 \\
0 + 8x^3 + 2x^2 & \text{iv.} \quad 2x^2 \times \boxed{1} = 2x^2 \\
\underline{-\,8x^3} & \\
0 + 2x^2 & \\
\underline{-\,2x^2} & \\
0 &
\end{array}
$$

$\therefore$ Quotient = $3x^3 - 2x^2 + 4x + 1$
Remainder = 0

x. $(25m^4 - 15m^3 + 10m + 8) \div 5m^3$

$$
\begin{array}{r|l}
5m^3 \overline{)25m^4 - 15m^3 + 10m + 8} & \\
\underline{-\ 25m^4} & \text{Explanation:} \\
0\ -15m^3 + 10m + 8 & \text{i.} \quad 5m^3 \times \boxed{5m} = 25m^4 \\
\underline{-15m^3 +} & \text{ii.} \quad 5m^3 \times \boxed{-3} = -15m^3 \\
0\ +10m + 8 &
\end{array}
$$

$\therefore$ Quotient = 5m – 3
Remainder = 10m + 8

Maharashtra Board Class 8 Maths Chapter 10 Division of Polynomials Practice Set 10.1 Intext Questions and Activities

Question 1.
Fill in the blanks in the following examples. (Textbook pg. no. 61)

1. $2a + 3a =$ __
2. $7b - 4b =$ __
3. $3p \times p^2 =$ __
4. $5m^2 \times 3m^2 =$ __
5. $(2x + 5y) \times 3x =$ __
6. $(3x^2 + 4y) \times (2x + 3y) =$ __

Solution:

1. $2a + 3a = 5a$
2. $7b - 4b = 3b$
3. $3p \times p^2 = 3p^3$
4. $5m^2 \times 3m^2 = 15m^4$
5. $(2x + 5y) \times 3x = 6 + 15yx$
6. $(3x^2 + 4y) \times (2x + 3y) = 6x^3 + 9x^2y + 8xy + 12y^2$

Practice Set 10.2 8th Std Maths Answers Chapter 10 Division of Polynomials

Division of Polynomials Class 8 Practice Set 10.2 Question 1. Divide and write the quotient and the remainder.
i. $(y^2 + 10y + 24) \div (y + 4)$
ii. $(p^2 + 7p - 5) \div (p + 3)$
iii. $(3x + 2x^2 + 4x^3) \div (x - 4)$
iv. $(2m^3 + m^2 + m + 9) \div (2m - 1)$
v. $(3x - 3x^2 - 12 + x^4 + x^3) \div (2 + x^2)$
vi. $(a^4 - a^3 + a^2 - a + 1) \div (a^3 - 2)$
vii. $(4x^4 - 5x^3 - 7x + 1) \div (4x - 1)$
Solution:
i. $(y^2 + 10y + 24) \div (y + 4)$

$$
\begin{array}{r|l}
y+4 \overline{)\, y^2+10y+24} & \\
\underline{y^2+4y} & \\
0+6y+24 & \text{Explanation:} \\
\underline{6y+24} & \text{i.} \quad (y+4) \times \boxed{y} = y^2+4y \\
0 & \text{ii.} \quad (y+4) \times \boxed{6} = 6y+24
\end{array}
$$

$\therefore$ Quotient = y + 6
Remainder = 0

ii. $(p^2 + 7p - 5) \div (p + 3)$

$$
\begin{array}{r|l}
p+3 \overline{)\, p^2+7p-5} & \\
\underline{p^2+3p} & \text{Explanation:} \\
0+4p-5 & \text{i.} \quad (p+3) \times \boxed{p} = p^2+3p \\
\underline{4p+12} & \text{ii.} \quad (p+3) \times \boxed{4} = 4p+12 \\
0\ -17 &
\end{array}
$$

$\therefore$ Quotient = p + 4
Remainder = -17

iii. $(3x + 2x^2 + 4x^3) \div (x - 4)$
Write the dividend in descending order of their indices.
$3x + 2x^2 + 4x^3 = 4x^3 + 2x^2 + 3x$

$$
\begin{array}{r|l}
4x^2 + 18x + 75 & \\
\hline
x-4 \;\big)\; 4x^3 + 2x^2 + 3x & \\
4x^3 - 16x^2 & \\
\hline
0 + 18x^2 + 3x & \\
18x^2 - 72x & \\
\hline
0 + 75x & \\
75x - 300 & \\
\hline
0 + 300 &
\end{array}
$$

Explanation:

i. $(x-4) \times \boxed{4x^2}$
$= 4x^3 - 16x^2$

ii. $(x-4) \times \boxed{18x}$
$= 18x^2 - 72x$

iii. $(x-4) \times \boxed{75}$
$= 75x - 300$

∴ Quotient = $4x^2 + 18x + 75$
Remainder = 300

iv. $(2m^3 + m^2 + m + 9) \div (2m - 1)$

$$
\begin{array}{r|l}
m^2 + m + 1 & \\
\hline
2m-1 \;\big)\; 2m^3 + m^2 + m + 9 & \\
2m^3 - m^2 & \\
\hline
0 + 2m^2 + m + 9 & \\
2m^2 - m & \\
\hline
0 + 2m + 9 & \\
2m - 1 & \\
\hline
0 + 10 &
\end{array}
$$

Explanation:

i. $(2m-1) \times \boxed{m^2}$
$= 2m^3 - m^2$

ii. $(2m-1) \times \boxed{m}$
$= 2m^2 - m$

iii. $(2m-1) \times \boxed{1}$
$= 2m - 1$

∴ Quotient = $m^2 + m + 1$
Remainder = 10

v. $(3x - 3x^2 - 12 + x^4 + x^3) \div (2 + x^2)$
Write the dividend in descending order of their indices.
$(x^4 + x^3 - 3x^2 + 3x - 12) \div (x^2 + 2)$

$$
\begin{array}{r|l}
x^2+x-5 & \text{Explanation:} \\
x^2+2\overline{)\,x^4+x^3-3x^2+3x-12} & \text{i. } (x^2+2)\times \boxed{x^2} \\
\underline{x^4 \quad +2x^2} & \quad = x^4+2x^2 \\
0+x^3-5x^2+3x-12 & \text{ii. } (x^2+2)\times \boxed{x} \\
\underline{x^3 \quad +2x} & \quad = x^3+2x \\
0\ -5x^2+x\ -12 & \text{iii. } (x^2+2)\times \boxed{-5} \\
\underline{-5x^2 \quad -10} & \quad = -5x^2-10 \\
0\ +x\ -2 &
\end{array}
$$

∴ Quotient = $x^2 + x - 5$
Remainder = $x - 2$

vi. $(a^4 - a^3 + a^2 - a + 1) \div (a^3 - 2)$

$$
\begin{array}{r|l}
a-1 & \text{Explanation:} \\
a^3-2\overline{)\,a^4-a^3+a^2-a+1} & \text{i. } (a^3-2)\times \boxed{a} \\
\underline{a^4 \quad -2a} & \quad = a^4-2a \\
0\ -a^3+a^2+a+1 & \text{ii. } (a^3-2)\times \boxed{-1} \\
\underline{-a^3 \quad +2} & \quad = -a^3+2 \\
0\ +a^2+a-1 &
\end{array}
$$

∴ Quotient = $a - 1$
Remainder = $a^2 + a - 1$

vii. $(4x^4 - 5x^3 - 7x + 1) \div (4x - 1)$
Write the dividend in descending order of their indices.
$(4x^4 - 5x^3 - 7x + 1) = (4x^4 - 5x^3 + 0x^2 - 7x + 1)$

$$
\begin{array}{r|l}
a-1 & \text{Explanation:} \\
a^3-2\overline{)\,a^4-a^3+a^2-a+1} & \text{i. } (a^3-2)\times \boxed{a} \\
\underline{a^4 \quad -2a} & \quad = a^4-2a \\
0\ -a^3+a^2+a+1 & \text{ii. } (a^3-2)\times \boxed{-1} \\
\underline{-a^3 \quad +2} & \quad = -a^3+2 \\
0\ +a^2+a-1 &
\end{array}
$$

∴ Quotient = $x^3 - x^2 - x4 - 2916$

Remainder = -1316