**Worksheet: Introduction to Circles**

**Part I – Circumference and Radius**

$$C=2πr$$

1. If the radius of a circle is 4 cm, what is the circumference?

2. If the radius of a circle is 8 cm, what is the circumference?

3. If the radius of a circle is 0.5 inches, what is the circumference?

$$r=\frac{C}{2π}$$

4. If the circumference of a circle is 40 mm, what is the radius?

5. If the circumference of a circle is 80 mm, what is the radius?

6. If the circumference of a circle is 94.25 inches, what is the radius?

**Part II – Circumference and Diameter**

$C=2πr$ and $C=πd$

1. If the diameter of a circle is 9 cm, what is the circumference?

2. If the diameter of a circle is 18 cm, what is the circumference?

3. If the diameter of a circle is 27 cm, what is the circumference?

$r=\frac{C}{2π}$ and $d=\frac{C}{π}$

3. If the circumference of a circle is 44 inches, what is the diameter?

4. If the circumference of a circle is 70 cm, what is the diameter?

5. If the circumference of a circle is 200 mm, what is the diameter?

**Part III – Area and Radius**

$$A=πr^{2}$$

$$d=2r$$

1. If the radius of a circle is 4 inches, what is the area?

2. If the radius of a circle is 8 inches, what is the area?

3. If the radius of a circle is 16 inches, what is the area?

4. If the area of a circle is 100 in2, what is the radius? What is the diameter?

5. If the area of a circle is 200 in2, what is the radius? What is the diameter?

6. If the area of a circle is 400 in2, what is the radius? What is the diameter?

**Part IV – Area and Diameter**

1. If the diameter of a circle is 5 cm, what is the area?

2. If the diameter of a circle is 10 cm, what is the area?

3. If the diameter of a circle is 20 cm, what is the area?

4. If the area of a circle is 100 mm2, what is the diameter? What is the radius?

5. If the area of a circle is 400 mm2, what is the diameter? What is the radius?

6. If the area of a circle is 900 mm2, what is the diameter? What is the radius?

**Part V – Degree Measure of an Arc**

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| --- | --- |
| 1. If m∠APB = 80°, what is m$\hat{AB}$?2. If m∠APB = 80°, what is m$\hat{ACB}$? |  |
| 3. If m∠APB = 120°, what is m$\hat{AB}$?4. If m∠APB = 120°, what is m$\hat{ACB}$? |  |
| 5. If m∠APB = 90° and m∠CPB = 100°, what is m$\hat{AB}$?6. And, what is m$\hat{BC}$ ?7. And, what is m$\hat{BCA}$ ?8. And, what is m$\hat{BAC}$ ?9. What is the m$\hat{AB}$ + m$\hat{BCA}$ ? |  |

**Part VI – Arc Length**

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| --- | --- |
| 1. If m∠APB = 45°, and PA = 10 cm, what is the length of $\hat{AB}$? |  |
| 2. If m∠APB = 70°, and m∠BPC = 120°,PA = 3 cm, what is the length of $\hat{AB}$?3. What is the length of $\hat{BC}$?4. What is the length of $\hat{AC}$?5. What is the circumference of circle P? |  |
| 6. If AC is the diameter, m∠APB = 72°PB = 40 mm, what is m$\hat{AB}$?7. What is m∠CPB?8. What is m$\hat{BC}$?9. What is the length of $\hat{AB}$?10. What is the length of $\hat{BC}$?11. What is the area of circle P? |  |

**Worksheet: Introduction to Circles – ANSWER KEY**

**Part I – Circumference and Radius**

$$C=2πr$$

1. If the radius of a circle is 4 cm, what is the circumference?

**C = 2πr = 2π(4) = 8 π = 25.13 cm**

2. If the radius of a circle is 8 cm, what is the circumference?

**C = 2πr = 2π(8) = 16 π = 50.27 cm**

3. If the radius of a circle is 0.5 inches, what is the circumference?

**C = 2πr = 2π(1/2) = π = 3.14 in**

$$r=\frac{C}{2π}$$

4. If the circumference of a circle is 40 mm, what is the radius?

**r = C/2π = 40/2π = 20/π = 6.37 mm**

5. If the circumference of a circle is 80 mm, what is the radius?

**r = C/2π = 80/2π = 40/π = 12.73 mm**

6. If the circumference of a circle is 94.25 inches, what is the radius?

**r = C/2π = 94.25/2π = 15 in**

**Part II – Circumference and Diameter**

$C=2πr$ and $C=πd$

1. If the diameter of a circle is 9 cm, what is the circumference?

**C = πd = π(9) = 9 π = 28.26 cm**

2. If the diameter of a circle is 18 cm, what is the circumference?

**C = πd = π(18) = 18 π = 56.55 cm**

3. If the diameter of a circle is 27 cm, what is the circumference?

**C = πd = π(27) = 27 π = 84.82 cm**

$r=\frac{C}{2π}$ and $d=\frac{C}{π}$

3. If the circumference of a circle is 44 inches, what is the diameter?

**d = C/π = 44/π = 14 in**

4. If the circumference of a circle is 70 cm, what is the diameter?

**d = C/π = 70/π = 22.28 cm**

5. If the circumference of a circle is 200 mm, what is the diameter?

**d = C/π = 200/π = 63.66 mm**

**Part III – Area and Radius**

$$A=πr^{2}$$

$$d=2r$$

1. If the radius of a circle is 4 inches, what is the area?

**A = πr2 = π(4)2 = 16 π = 50.27 in2**

2. If the radius of a circle is 8 inches, what is the area?

**A = πr2 = π(8)2 = 64 π = 201.06 in2**

3. If the radius of a circle is 16 inches, what is the area?

**A = πr2 = π(16)2 = 256 π = 804.25 in2**

4. If the area of a circle is 100 in2, what is the radius? What is the diameter?

**A = πr2**

**100 = πr2**

**r = 5.64 in** *and* **d = 11.28 in**

5. If the area of a circle is 200 in2, what is the radius? What is the diameter?

**A = πr2**

**200 = πr2**

**r = 7.98 in** *and* **d = 15.96 in**

6. If the area of a circle is 400 in2, what is the radius? What is the diameter?

**A = πr2**

**400 = πr2**

**r = 11.28 in** *and* **d = 22.56 in**

**Part IV – Area and Diameter**

1. If the diameter of a circle is 5 cm, what is the area?

**A = πr2 = π(2.5)2 = 19.63 cm2**

2. If the diameter of a circle is 10 cm, what is the area?

**A = πr2 = π(5)2 = 25 π = 78.54 cm2**

3. If the diameter of a circle is 20 cm, what is the area?

**A = πr2 = π(10)2 = 100 π = 314.16 cm2**

4. If the area of a circle is 100 mm2, what is the diameter? What is the radius?

**A = πr2**

**100 = πr2**

**r = 5.64 mm** *and* **d = 11.28 mm**

5. If the area of a circle is 400 mm2, what is the diameter? What is the radius?

**A = πr2**

**400 = πr2**

**r = 11.28 mm** *and* **d = 22.56 mm**

6. If the area of a circle is 900 mm2, what is the diameter? What is the radius?

**A = πr2**

**900 = πr2**

**r = 16.93 mm** *and* **d = 33.86 mm**

**Part V – Degree Measure of an Arc**

|  |  |
| --- | --- |
| 1. If m∠APB = 80°, what is m$\hat{AB}$?**80°**2. If m∠APB = 80°, what is m$\hat{ACB}$?**360 – 80 = 280°** |  |
| 3. If m∠APB = 120°, what is m$\hat{AB}$?**120°**4. If m∠APB = 120°, what is m$\hat{ACB}$?**360 – 120 = 240°** |  |
| 5. If m∠APB = 90° and m∠CPB = 100°, what is m$\hat{AB}$?**90°**6. And, what is m$\hat{BC}$ ?**100°**7. And, what is m$\hat{BCA}$ ?**mCA = 360 – mAB – mBC = 360 – 90 – 100 = 170therefore,mBCA = mBC + mCA = 100 + 170 = 270**8. And, what is m$\hat{BAC}$ ?**mBAC = mBA = mAC = 90 + 170 = 260°**9. What is the m$\hat{AB}$ + m$\hat{BCA}$ ?**360°** |  |

**Part VI – Arc Length**

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| 1. If m∠APB = 45°, and PA = 10 cm, what is the length of $\hat{AB}$?**L = (M/360)(2πr) = (45/360)(2π10) = 2.5π = 7.85 cm** |  |
| 2. If m∠APB = 70°, and m∠BPC = 120°,PA = 3 cm, what is the length of $\hat{AB}$?**L = (M/360)(2πr) = (70/360)(2π3) = 3.67 cm**3. What is the length of $\hat{BC}$?**L = (120/360)(2π3) = 2π = 6.28 cm**4. What is the length of $\hat{AC}$?**L = (M/360)(2πr) = (170/360)(2π3) = 8.90 cm**5. What is the circumference of circle P?**C = 2πr = 2π3 = 6π = 18.85cm** |  |
| 6. If AC is the diameter, m∠APB = 72°PB = 40 mm, what is m$\hat{AB}$?**72°**7. What is m∠CPB?**180 – 72 = 108°**8. What is m$\hat{BC}$?**108°**9. What is the length of $\hat{AB}$?**L = (72/360)(2π40) = 16 π = 50.27 mm**10. What is the length of $\hat{BC}$?**L = (108/360)(2π40) = 24 π = 75.4 mm**11. What is the area of circle P?**A = 5026.55 mm2** |  |