# Table 6: ECC Benchmarks – Curve Parameters and Security

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| Elliptic Curve (Curve Name) | Key Size (bits) | Equivalent Symmetric Key Strength | Signature Generation Time (ms) | Signature Verification Time (ms) | Notes |
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| secp256r1 (often referred to as P-256) | 256 | 128 bits | 5 | 10 | Widely used, recommended by NIST |
| secp384r1 (P-384) | 384 | 192 bits | 15 | 30 | Higher security level, recommended by NIST |
| secp521r1 (P-521) | 521 | 256 bits | 25 | 50 | Highest security level, recommended by NIST |
| curve25519 (for ECDH) and ed25519 (for signatures) | 256 | 128 bits | 3 | 6 | Popular for modern applications; efficient |
| brainpoolP256r1 | 256 | 128 bits | 6 | 12 | Alternative to NIST curves |
| brainpoolP384r1 | 384 | 192 bits | 18 | 36 | Alternative to NIST curves |